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The Macintosh™ Magazine

*Special Edition*

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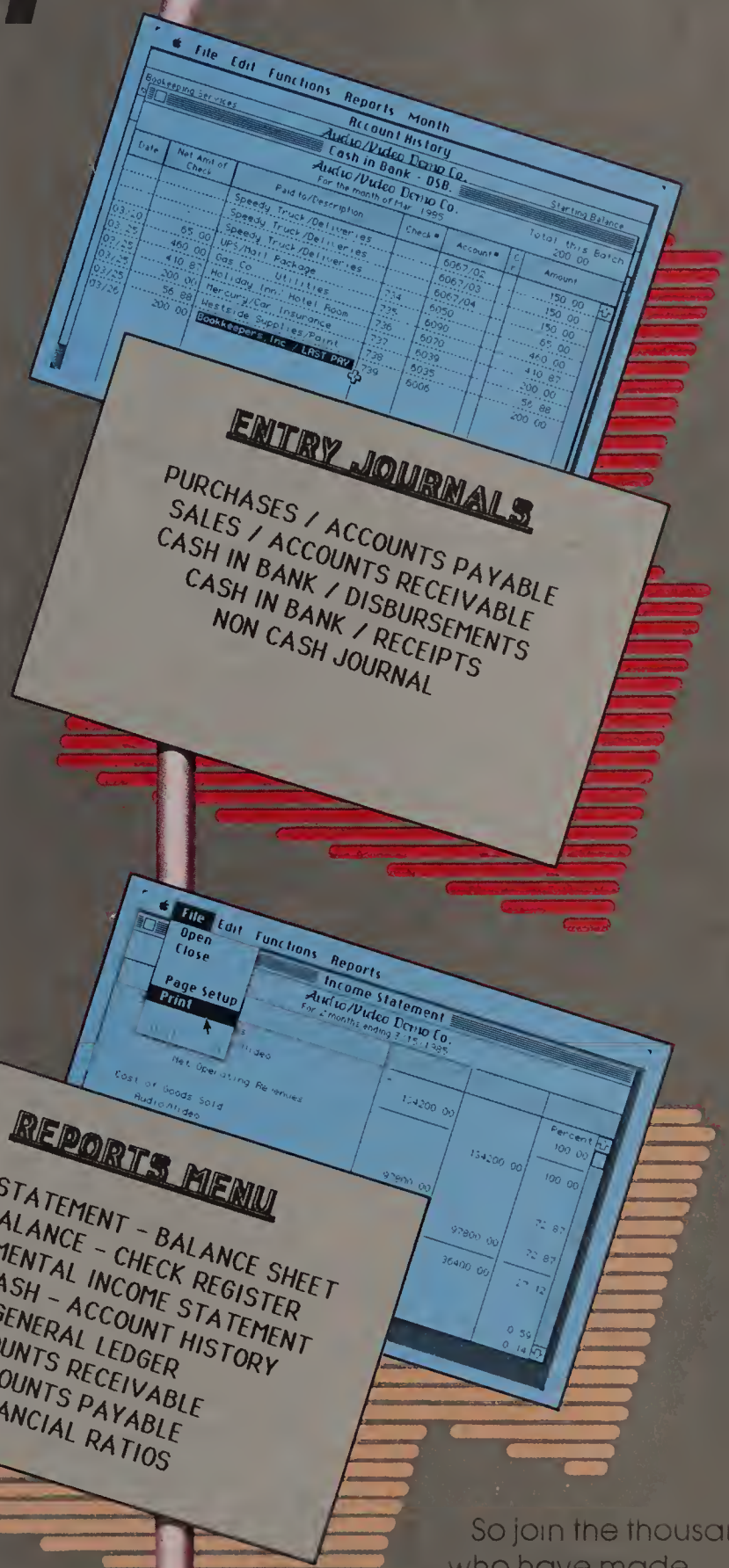


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# MACWORLD

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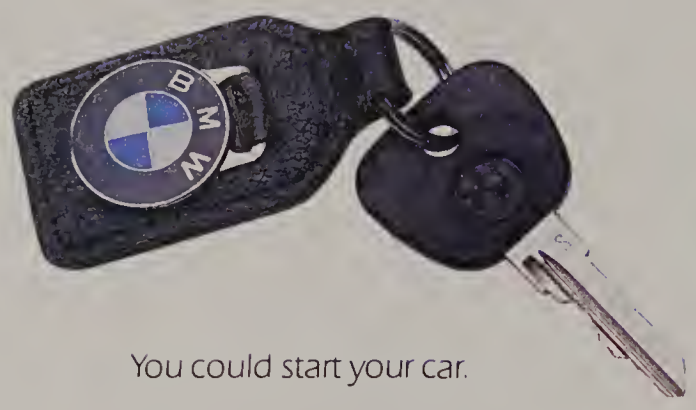

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Erfert Nielson

# From Yuppie Toy to Office Tool

*The Macintosh is maturing into a serious business machine*

Why devote an entire issue to the Macintosh office? Because if the Macintosh and its descendants are going to survive, the Mac is going to have to get its foot in the corporate door. The home computer market is dwindling because people find it hard to justify spending several thousand dollars for a machine that lets them balance their checkbooks and write a few letters. Since the attractive Amiga will probably grab a share of the declining home market, it is certainly in Apple's interest to focus on the business market.

The Mac has entered the workplace slowly for a number of reasons: a lack of business software, a dearth of memory, limited hardware options, and last but not least, an image problem. The Macintosh is seen by many people as a cute and frivolous computer, in part because of the standard Apple has set in easy-to-use software. How can a computer that displays a little smiling face when you insert a disk be a serious business machine? Many's the time I've heard the scathing term *yuppie toy* applied to the Mac. But times are changing.

The purpose of this special issue is to show, by means of several examples, that the Mac is up and running in a variety of business settings and that it can match—and surpass in some areas—the utility of established business computers. Some of the articles demonstrate how the Macintosh has achieved a state of peaceful coexistence with other personal computers; many companies are exchanging files between IBM PCs or PC compatibles and Macs. Other companies are replacing existing systems with the Mac, citing affordability, easy-to-learn programs, portability, and superb graphics as reasons for choosing the Mac over other brands. While this issue of *Macworld* does not detail how to connect a network or set up a database, the articles should give you an idea of the Mac's potential in the workplace.

When we started working on this special edition last spring, Apple's concept of the "Macintosh Office," which consists of several Macs connected by AppleTalk to a file server and a LaserWriter, existed only in promotional brochures. As you will see in the following articles, while not all Macintosh offices fit Apple's mold, the Mac is proving to be a viable business machine in settings that vary from a Texas oil field to a New York ad agency. Profiles in the "Business World View" section suggest that the Mac is the ideal computer for many small companies and individual businesspeople: a fashion designer, a lawyer, a software publisher, and others.

*(continues on page 12)*

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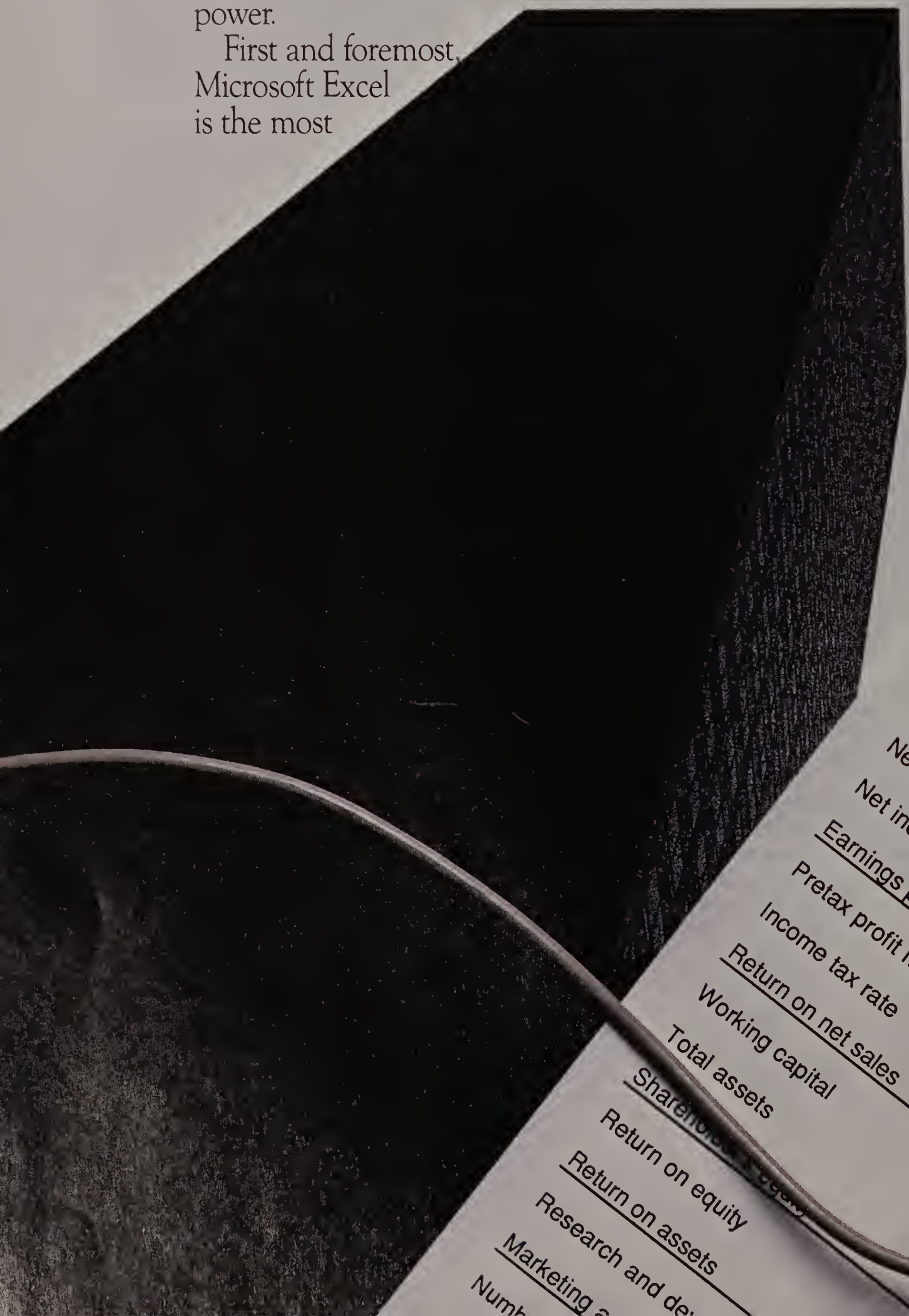

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Erfert Nielson

Many companies have balked at buying a Mac because of the lack of business software. The close to 400 business programs listed in this issue's "Business Software Review" section should illustrate that this complaint is no longer valid.

The Macintosh is maturing. A year ago the Mac, with a puny 128K of memory and accompanied by only a handful of programs, was less than attractive as an office computer. But with memory upgrades, hard disks, the LaserWriter, and several hundred business applications, the Mac becomes a formidable business machine. While the Mac still suffers somewhat from an image problem, more and more professionals are beginning to take the Macintosh seriously. Just spend an hour or two with a spreadsheet or a database, and I'm sure you'll agree with me that the Macintosh has the potential to be no fun at all.

*Erfert Nielson is an Assistant Editor of* Macworld *and coordinator of the special edition.* □


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# HYPERDRIVE ANNOUNCES THE LIBERATION OF 400,000 MICE.

This message is for the several hundred thousand people who bought a Macintosh because of its user-friendliness—and then found it a bit slow in expressing its affections.

For those who find themselves frequently feeding floppies. And waiting. And wishing the Macintosh's capacity for work matched its appetite.

For all those who've learned to live with these and a variety of other limitations, we're pleased to announce a richly rewarding un-learning experience.

## INTRODUCING HYPERDRIVE 20. TWENTY MILLION BYTES. NO WAITING.

HyperDrive 20 is a new internal hard disk that, when installed in your Macintosh, makes it the World's Fastest Macintosh. Up to 15 times faster than a conventional Mac that runs on floppies.

In fact, as Personal Computing magazine put it, "Using a HyperDrive compared to a regular Macintosh is akin to cooking with a microwave oven instead of a gas range."

This rather heady level of performance may be attributed to a simple principle of engineering: Macintoshes, like human beings, travel faster and better when unencumbered by excess luggage.

Unlike all other hard disks, which are external, HyperDrive connects directly to the Macintosh's microprocessor. This gives it an insurmountable lead over external disks—which, since they have to slow down to talk through one of the Macintosh's ports, will forever lag behind.

## A FAREWELL, OF SORTS, TO FLOPPIES.

The HyperDrive 20 hard disk holds as much as fifty floppies (twenty megabytes). And if it holds them, you won't have to.

But besides holding more information, HyperDrive manages it more intelligently.

It recognizes, for example, that files are organic creations, with a tendency to grow with their own special urgency to their own self-determined size. HyperDrive is engineered accordingly.

It lets you divide your disk into 32 file drawers, each holding up to 512 files. These files automatically re-size, swelling or shrinking according to what you put in or take out. Which lets you use storage space according to your dictates, instead of your computer's.

## POWERFUL ENOUGH FOR POWERFUL SOFTWARE.

HyperDrive 20 will run all Macintosh programs, including Apple's new Switcher. And it will run them faster.

**MANAGE HUGE AMOUNTS OF INFORMATION, INSTEAD OF HUGE AMOUNTS OF FLOPPIES.**

But HyperDrive 20 will also run programs that the regular Macintosh, for all its friendliness, lacks the sophistication to handle effectively. Programs such as Lotus' Jazz, for example. And Microsoft's Word. Powerful business software that can multiply a Macintosh's performance and productivity.

**VAST DIFFERENCES IN PERFORMANCE. A TINY DIFFERENCE IN APPEARANCE.**

HyperDrive 20 also comes with its own software that elevates both the friendliness and the sophistication of your Macintosh.

Such as a backup program, unsurprisingly named Backup, that lets you back up and restore information from the hard disk to and from your floppies.

There's even a print spooler that lets you use your Macintosh for other jobs while your printer is busy churning out the one you just finished.

## VAST VS. TWICE AS VAST.

For all its emancipating qualities, there's one item that HyperDrive won't liberate you from. The Apple warranty.

Even though your Macintosh must be opened (by an Apple dealer) to install HyperDrive, your warranty remains intact. But Apple won't be the only one watching over you.

HyperDrive is further backed by our own 90-day limited warranty and an optional HyperCare extended service contract. And service is readily available at participating Apple dealers nationwide. (See your nearest dealer for complete warranty.details.)

In fact, the only imaginable problem left unattended by HyperDrive is that of deciding which to buy—HyperDrive 10 or HyperDrive 20.

That will depend largely on how much capacity you need: vast or twice as vast.

You can make that determination by visiting a participating Apple dealer and seeing HyperDrive in action. Or call us at (800) 422-0101 or (617) 492-5500. In Canada, call our distributor at (800) 565-1267.

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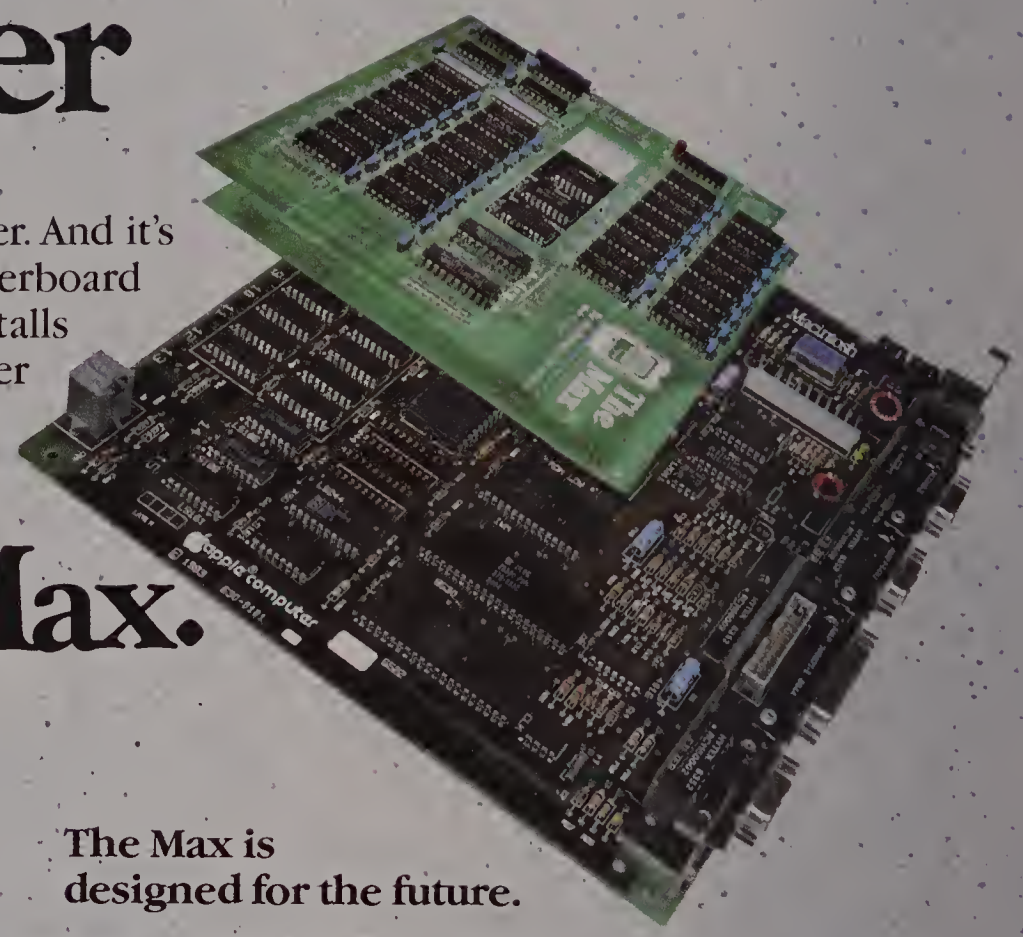
# Like Mother, Like Daughter

We loved the Macintosh so much we gave it a daughter. And it's everything a daughter should be. The Max™ is a daughterboard that combines with a Macintosh motherboard and installs in minutes. The Max increases your computing power from 128K or 512K to a full 1.5 megabytes of configurable memory. Its RAM disk runs circles around even the fastest internal disk drives.

## The Max.




**The Max lets you do more.**

You can run all your present software with The Max. Use data bases, word processors and integrated programs like Jazz to create more elaborate spreadsheets, work with larger documents, and file more data than ever before.

With The Max and Apple's Switcher, you can run up to eight applications at once – all at RAM speed!

If you crash, The Max forgives you. Unlike other RAM disks, The Max allows you to reset and recover your 1024K RAM disk intact.

**The Max is fast.**

The Max doesn't waste your time. Move in and out of applications almost 10 times faster than a floppy disk – and 2 to 3 times faster than an internal disk drive. Boot MacPaint in 2.6 seconds, or MacWrite in 3.4 seconds!

**The Max lets you configure.**

The MaxRAM™ software included with The Max allows you to configure your Mac to suit your needs. Have 1024K of usable, contiguous application space with a 400K RAM disk. Or select a 512K Macintosh with a 1024K RAM disk. And MaxRAM software makes this possible without any modifications or patches to your Apple ROMs.

**The Max is cool.**

Like the motherboard, the Max is cool and efficient. It adds only 1.3 watts to the power consumption, two to three times less than other memory expansions on the market.

**The Max is designed for the future.**

Unlike memory expansions using older technology, The Max has been designed to be fully expandable. It is pin compatible with the soon-to-be-released megabit chips† and address-decoded for 4 megabytes of memory, the maximum the Macintosh can address.

**The Max is available now.**

Contact your local dealer for more information about The Max. Kits are also available.

| | |
|---|---|
| 128K to The Max 1.5 Mb | $795 |
| 512K to The Max 1.5 Mb | $645 |
| 128K to 512K | $249 |

The Max comes with a 90-day warranty against defects in parts, materials and workmanship. An extended service contract for your entire Macintosh, MaxCare,™ is available through your dealer.

See your local dealer for more information about The Max, or contact MacMemory Inc., 473 Macara Avenue, Suite 701, Sunnyvale, CA 94086, (408) 773-9922.

## MacMemory Inc.

†Due to the unavailability of the one megabit chip, MacMemory anticipates, but cannot warrant, expandability to four megabytes. The expected production release date is early 1986.

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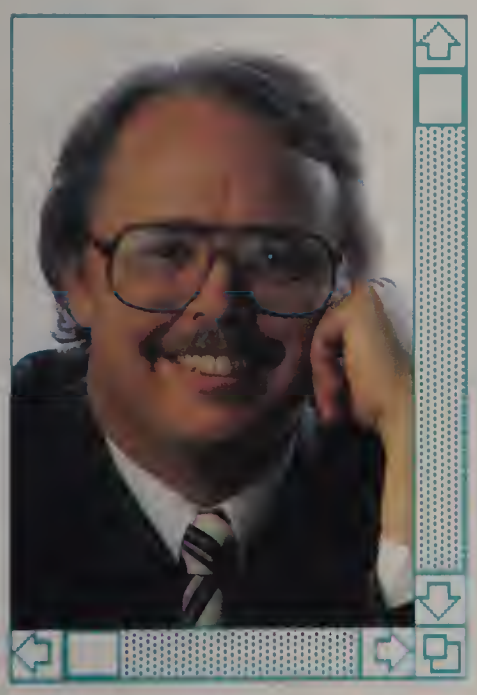
David Bunnell

# Farewell to the Forest

*A wistful look at how computers are changing our lives—and possibly our environment*



Before there were computers in the office, many people believed that the advent of personal computers would lead to a paperless office. Many magazine articles and books toyed with the notion of a fully automated business environment. Whole forests were probably decimated so people could expound on the topic.

Like a spoiled adolescent, the computer in the office isn't behaving quite like its marketing parents had in mind. Its presence has radically increased the use of paper.

Thanks to word processing, even memos are expected to be letter perfect and aesthetically designed. All kinds of documents go through read after read and require draft after draft. In the days before the computer, even legal papers occasionally had handwritten corrections or addenda. But those days are gone.

Of course, it's not entirely the computer's fault. Many people haven't been on their best behavior either. They refuse to edit on screen because it's "easier" to see it on paper, and they print out the same file countless times.

Putting people together with computers probably wasn't a hot idea. But since we're already in the same room, we need to learn how to live together.

The Macintosh office makes it much easier for computers and people to live together. Thanks to the Mac's bit-mapped graphics, business papers can be printed in a variety of fonts with an appropriate smattering of boldface and underlining throughout the text.

Adding graphics, charts, spreadsheets, and drawings to documents gives them extra impact. Using a laser printer makes them first class.

The Mac's screen is easier to read—and easier on the eyes—than the standard personal computer monitor. That makes more people inclined to edit on screen, so there might be hope for the trees yet.

On the other hand, the Macintosh is heralding a renaissance of newsletters and pamphlets. The Macintosh office gives people the power not only to comfortably draft and edit their ideas but to typeset, format, and design them.

The Mac's publishing potential is a shocking, intriguing revelation.

The inevitable addition of optical disk storage to the Macintosh will only make matters worse.

The first such system will probably be CD ROM (compact disk read-only memory). That system uses the same laser disks that store digital music played on compact disk players. CD ROM will radically expand the Mac's external memory. One disk will be able to hold the equivalent of 270,000 pages of text.

One startup company, Activenture, of Pacific Grove, California, has already demonstrated a CD ROM version of the Grolier Encyclopedia for the Atari ST520. So Apple can't be far behind.

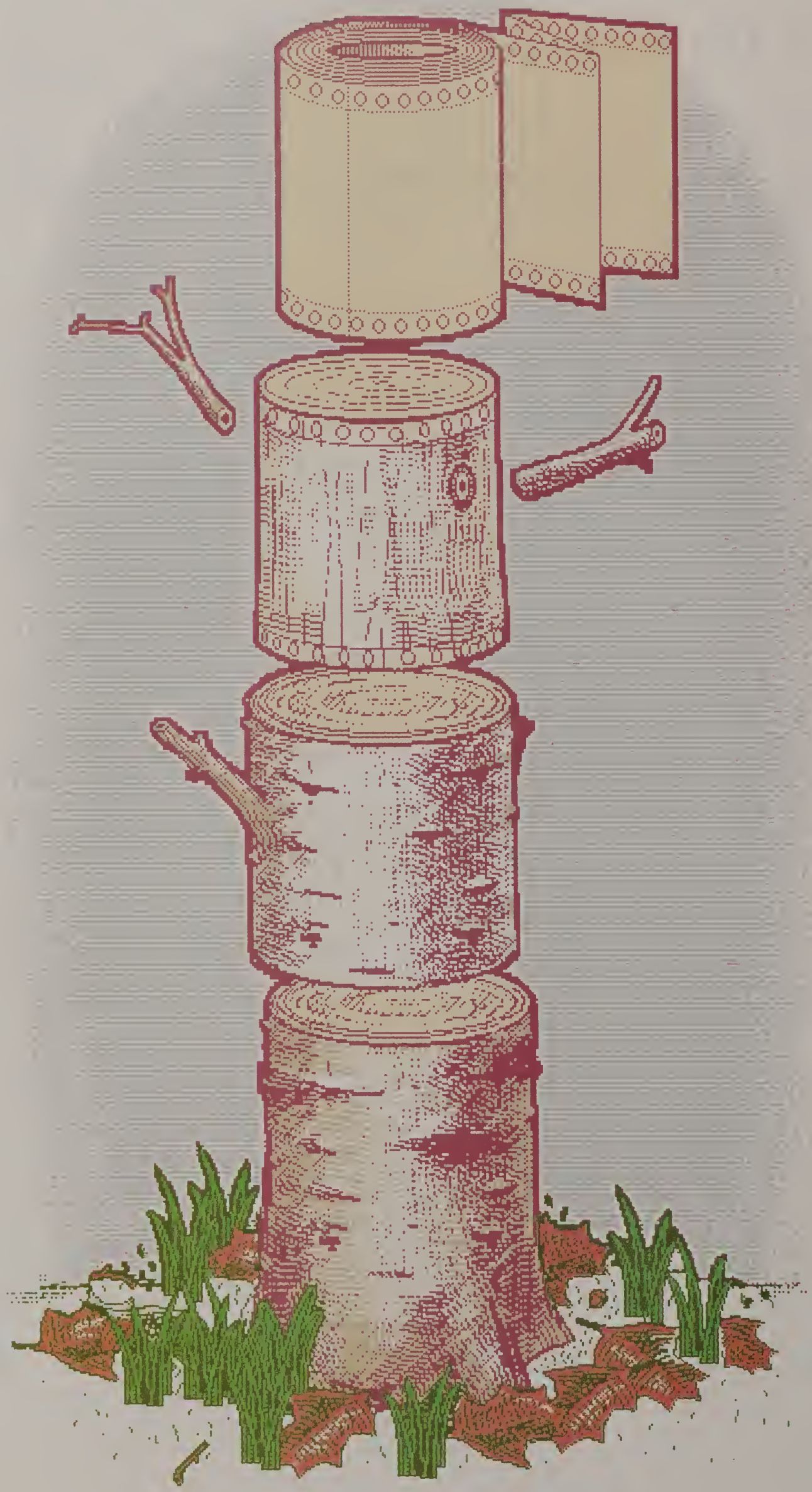
In one way, the emerging laser disk technology will drastically reduce the use of paper. Complete files, records, and even libraries will be published on CD ROM.

Eventually, Macintosh-compatible office equipment similar to optical character readers (OCRs) will let you scan paper documents to store on optical disk. The computer will also be able to receive electronic images over networks and via the telephone.

It seems logical that by publishing massive reference books on optical disks, we would reduce the use of paper.

*(continues on page 18)*

David Bunnell



*(continued from page 17)*

But by having access to the myriad databases covering all imaginable topics and by having the ability to download information to your computer, you become prone to printing that information. The floodgates of personal document production will open, and each of us will graduate from printing letters to publishing novels.

And once again people will behave badly.

Not only will memos and reports have to be beautiful, but they'll have to be substantiated, cross-referenced, and illustrated with voluminous reports and addenda.

Meanwhile, the increase in the amount of external memory will be paralleled by growth in ROM. In spite of the Mac's "closed" architecture, a company called Levco Enterprises is producing a 2-megabyte Mac upgrade called the MonsterMac. Several other companies are selling 1-megabyte upgrades.

Soon we will be able to produce 500-page Lotus *Jazz* documents.

The faithful few who still believe in the paperless office are probably waiting for portable, flat-screen, color Macintoshes. Such a computer, with super resolution and loads of memory, would encourage everyone to read everything on screen. *Time* magazine will eventually come on a tiny laser disk to insert into the computer. People will read computers on the bus and won't have to worry about bumping the person in the next seat when turning pages.

Well, there may be something to the paperless office after all, but don't count on it. I still haven't figured out how to resolve the side effects of the people/computer combination. But unless somebody does, the world's forests are destined to be gobbled up. □

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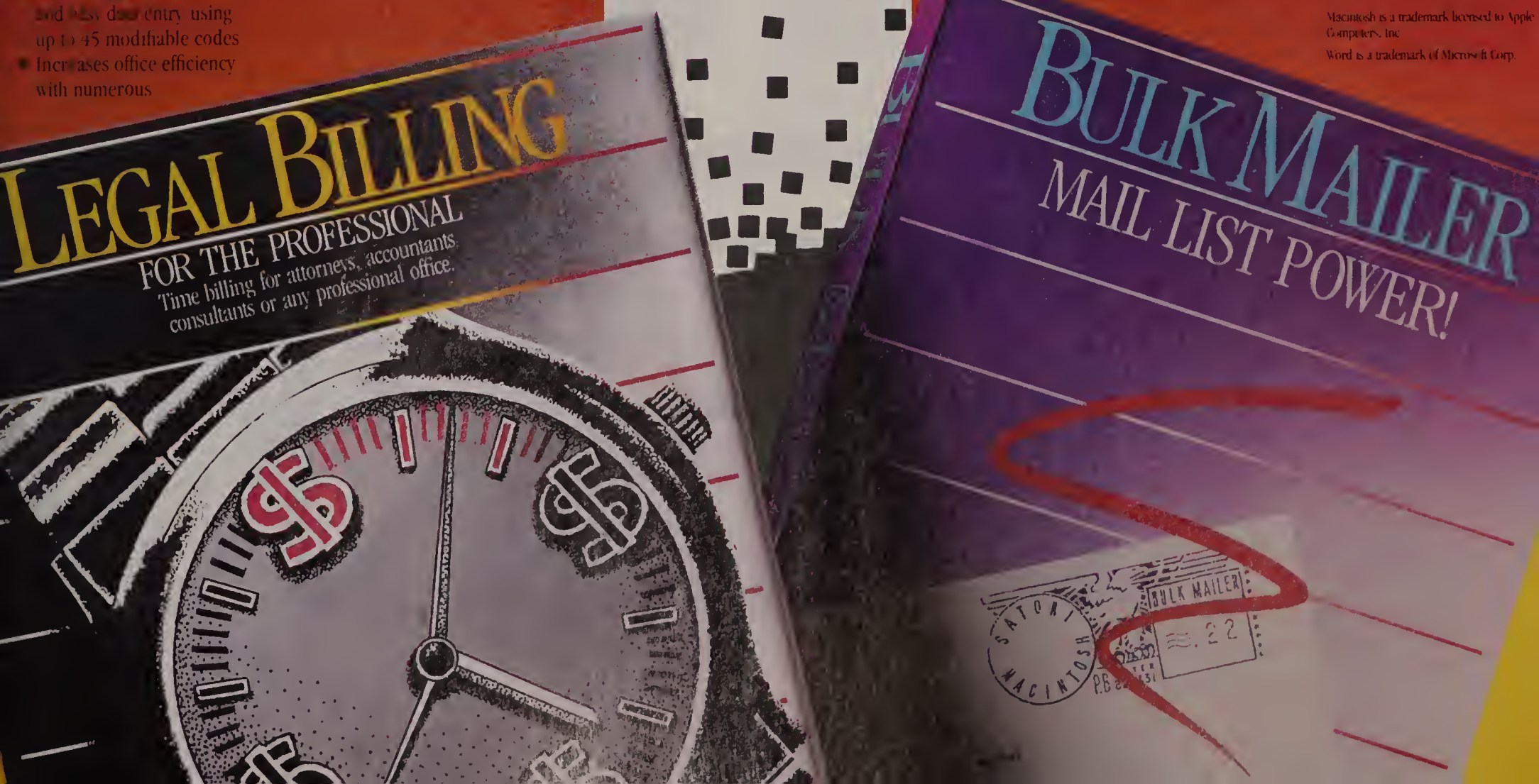

# DATA INDEPENDENCE:™ FU
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The Macintosh is a computer of great promise. Its enormous capabilities, compact size, and user friendliness make it a standout among microcomputers. Yet the marvelous Mac has mass storage limitations, including the file serving capabilities necessary to make The Macintosh Office live up to its full potential. Until now.

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For the individual Mac user, there's The Bernoulli Box Personal Server,™ featuring 5-Mb cartridges; and for The Macintosh Office, the new Bernoulli Box for AppleTalk,™ using 10-Mb cartridges. In either form, The Bernoulli Box fulfills all the promise of this amazing computer. The promise of virtually infinite storage capacity in a reliable system that serves the needs of the individual and the many. The promise of easy use, of high performance, of data security. The promise fulfilled by The Bernoulli Box.

Besides all the amazing things The Bernoulli Box does for the Macintosh, it does something pretty amazing for Macintosh users too. It gives them something we call data independence. And what's that? Well, mostly it's freedom. Freedom from a whole lot of data-related constraints and worries. It's freedom that can best be described in the following ways:

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Incredible resistance to shock and vibration combined with its rugged cartridge format frees you from concern about equipment failure, head crash, or data loss.

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System capacity is limited only by the number of compact cartridges you can store. You simply add more inexpensive cartridges instead of expensive hardware. Five-megabyte cartridges for the Personal Server, 10- or 20-megabyte cartridges for The Bernoulli Box for AppleTalk. Plus you can add more Bernoulli Boxes for AppleTalk as your demands grow. Freedom from the limitations of capacity and freedom to grow at your own pace.

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The Bernoulli Box for AppleTalk allows you to partition disks into segments that can be password protected. And both servers let you store sensitive documents on a cartridge that you can then remove and lock up where you know it's safe.

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# Mac3D

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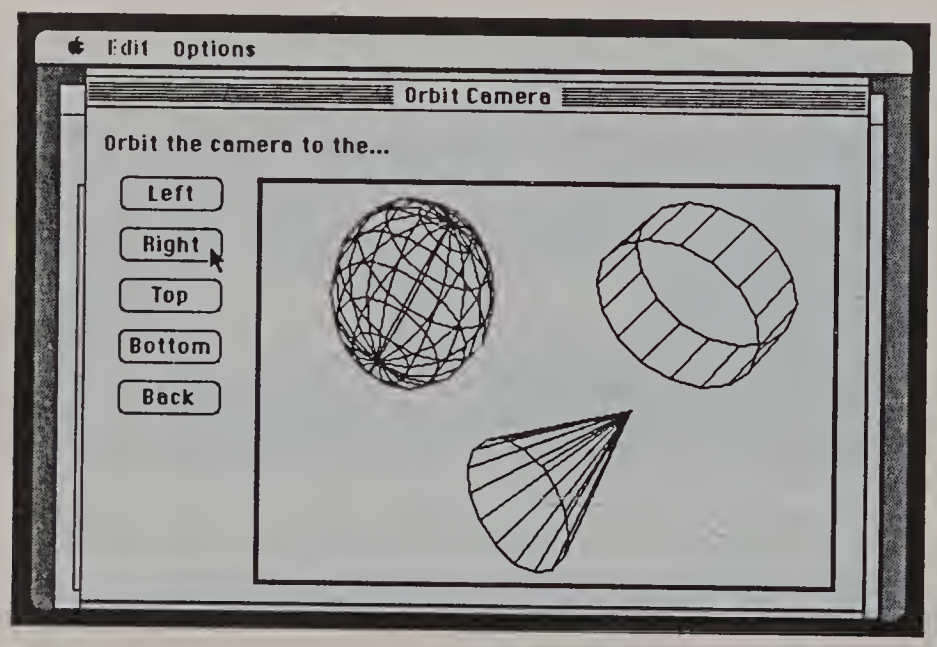
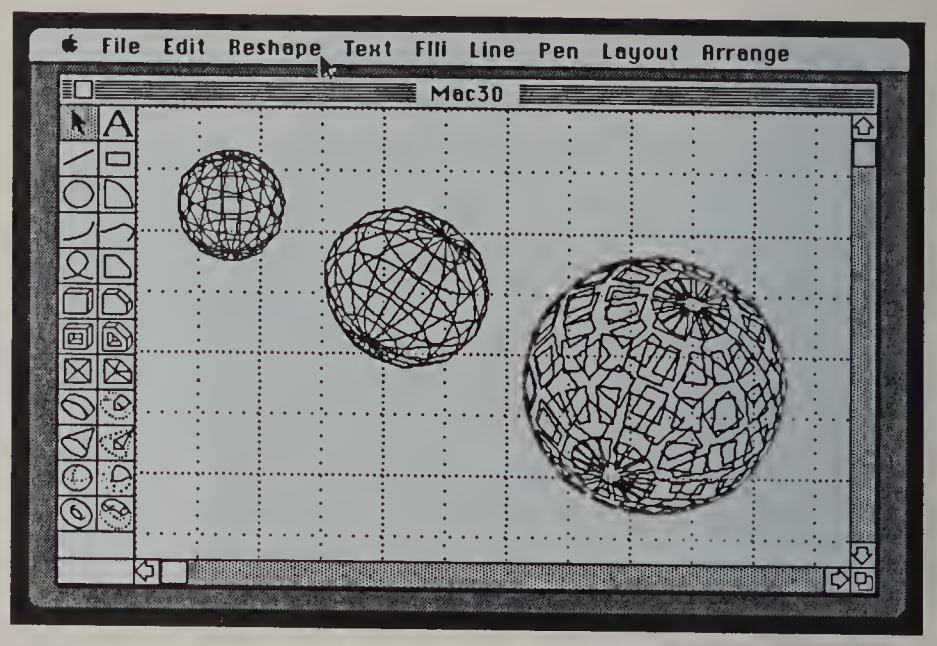



- **Moveable Camera.** Use our new Setup Camera option and observe a drawing from virtually any point of view--even from the inside looking out!

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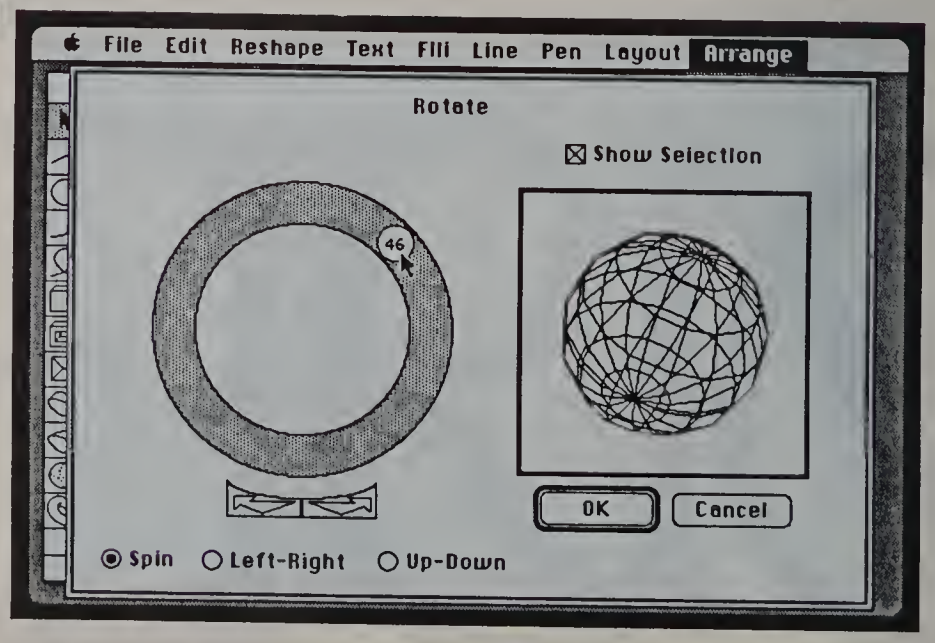


Mac3D requires a 512K Apple® Macintosh™ and an external disk drive.

For more information see your local computer dealer or contact:

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# Business World View

## *The Mac makes it big in small businesses*

***Edited by J. E. Arcellana***

*Not all Macintosh offices include AppleTalk networks, LaserWriters, and hard disks. Many small businesses and individual professionals have added the Macintosh to the tools of their trades. The following profiles show how six small concerns—a writer, a law firm, a fashion designer, a doctor, a construction engineer, and an architectural firm—have put the Macintosh to work.*

*Ramon Zamora tries to bring children closer to their parents through activity books that give another meaning to the term* interactive computing. *He writes and illustrates his books in* MacPaint.

## Manuscripts in MacPaint

### *Bringing the writer closer to a book's final look*

Creativity on the Macintosh results from its limitations as often as from its capabilities. Necessity, after all, is the mother of invention. For example, *MacWrite*'s inability to wrap text around a graphic image inspired writer and software designer Ramon Zamora to use *MacPaint* to prepare hundred-page manuscripts for major publishers.

"I have always wanted a writing tool," he says, "that works the way my mind works—in pictures and in arrangements of words and pictures."

Zamora works with art director Clifford West in an enterprise called Another Adventure, where the Macintosh has aided Zamora in the development of several projects, including an educational series of books with accompanying disks for Addison-Wesley and a *ThinkTank 512 Discovery Diskette* for Living Videotext. The *Discovery Diskette* is a disk that runs with *ThinkTank* and demonstrates how you can use the program in unusual and imaginative ways. Zamora and West gained much of their experience in developing educational materials when they were partners in ChildWare, a software development company that produced 15 programs in 18 months for publishers such as Electronic Arts and Fisher-Price.

**Well-Executed Amalgams**

Zamora is the author of the Apple II and Commodore 64 versions of the *Play Together, Learn Together* book-and-disk sets put out by Grolier Electronic Publishing. Each set offers parents and young children activities organized around the respective computers, although some

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activities do not emphasize the computer but rather the interaction between parent and child, according to Zamora. He used *MacPaint* with T/Maker's ClickArt Effects and digitized graphics to prepare the manuscripts for Grolier.

"A lot of people were shocked that I would try to 'word process' in *MacPaint,*" he says. "But that's easier than trying to move images into *MacWrite*. Beginners' books like *Play Together, Learn Together* are not just words but carefully designed and executed amalgams of visual and verbal elements. *MacPaint* allows me to be nonlinear in presentation and to create a direct image of how I want the pages to appear in final form [see 'Not-Too-Rough Draft']."

Zamora did some experimenting before starting the project. He set up manuscript templates using *MacPaint*'s Grid feature to establish blocks for text and graphics. The grid also simplified making revisions in text.

"I had the editors and the artists review my page mock-ups, and I adjusted the template based on their feedback," he relates. "I used a Thunderware ThunderScan digitizer to grab some preliminary images, made up a Scrapbook of those images with some variations and modifications, and used the images in developing the manuscript."

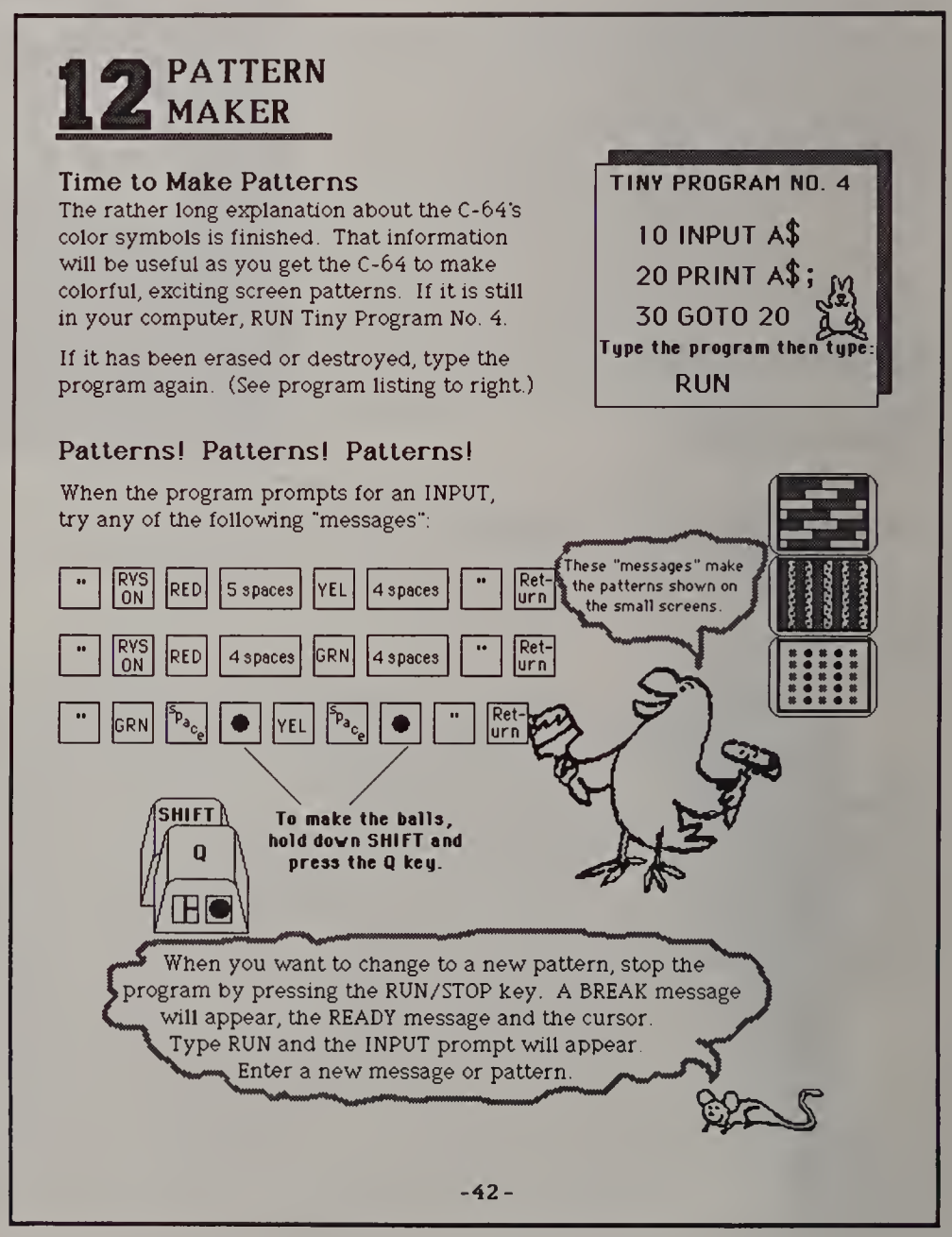
### Concrete Suggestions

Zamora says that his manuscript could almost be published directly on the LaserWriter. "In fact, when I first showed the Grolier people my manuscript," he recalls, "one of the artists expressed some concern that I had already composed so much of each page. I told him that I had merely made a more concrete suggestion of how I

*(continues on page 26)*

***Not-Too-Rough Draft***

*This is a page layout for a book on the Commodore 64 computer for parents with young children. Writer and designer Ramon Zamora prepared his manuscript entirely in* MacPaint, *which he says allows him to "create visual and verbal constructs" of how he wants the finished book to look.*



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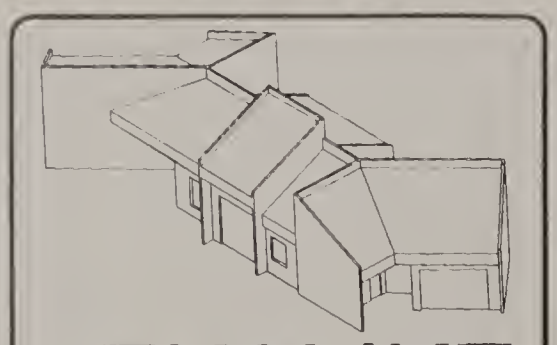

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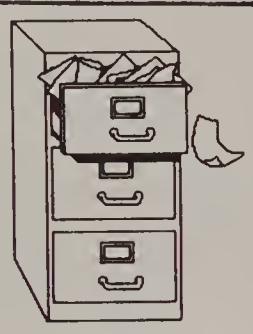

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wanted the page to appear as opposed to the old method of drawing little bubbles with cryptic messages saying, 'Put some art here.'"

Because a manuscript prepared on the Macintosh can be so close to the finished product, Zamora is looking into the self-publishing possibilities offered by the Macintosh and the LaserWriter printer. Instead of *MacPaint,* he plans to use *MacDraw,* which offers access to the LaserWriter fonts, for any manuscripts that Another Adventure might publish on its own. One such project that Zamora has in the works is a Macintosh workbook accompanied by a *MacPaint* data disk, along the lines of the *Play Together, Learn Together* sets. Currently he uses a LaserWriter at a local typesetting house, "but when I get my own LaserWriter," he says, "watch out!"

Common belief has been that computers and electronic media would threaten the existence of printed information. But the Macintosh is proving the contrary. It clears the way for creative, interactive, and independent book production by enabling writers and designers to overcome some of the obstacles found in traditional publishing. Of course, distribution is another matter, but people like Zamora will find ways to do that, too.– *Michael Newman*

# Friend of the Court

## *A lawyer makes a case for less paperwork*

As a trial lawyer and an occasional author of books and articles, David Epstein is familiar with the woes of excessive paper production. He has witnessed the mounting piles of yellow legal pads and the boxes of discarded drafts that are the refuse of the lawyer's trade. But since early 1984 Epstein and his associates have been using six Macintoshes, principally for word processing and organizing thoughts. The Macs in Epstein's Washington, D.C., office have helped streamline operations.

"Using a computer gives us more time to think about the legal problems of our clients. It minimizes the time spent on details such as retyping and proofing documents," says Epstein. He claims that editing and correcting documents on screen has reduced the time required to produce a legal brief by as much as 40 percent.

Epstein and his associates recently used the Macintosh to their advantage while preparing an amicus curiae (friend of the court) brief for the Supreme Court.

*(continues on page 28)*

*Before David Epstein ruled in favor of the Macintosh for his law practice in 1984, he had never used a computer. Now he's ready to take it all the way to the Supreme Court.*

# MacChemistry™

## Now! Desktop Technology Converts to Lab Bench Capabilities.

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## Business World View

"Three lawyers worked at Macs around the clock and printed out the brief. It was never touched by a secretary," says Epstein He predicts that his firm will save several thousand dollars a year in typing costs.

### Lightweight Legal Assistant

The Mac's portability is important to Epstein. When he travels out of town to interview witnesses, he takes along a Macintosh and an Imagewriter. He takes notes on the Mac and uses *ThinkTank* to organize, cross-reference, and analyze the material immediately after the deposition.

Epstein used his Mac extensively while handling a federal pension case in Montana recently. "I loaded my Mac files with case data, including depositions, witness lists, and exhibits. I worked on the Mac in my motel room to prepare my opening and closing remarks, record data each night on that day's court proceedings, add legal research notes on such things as the admissibility of evidence at issue, and outline points for the next day's arguments."

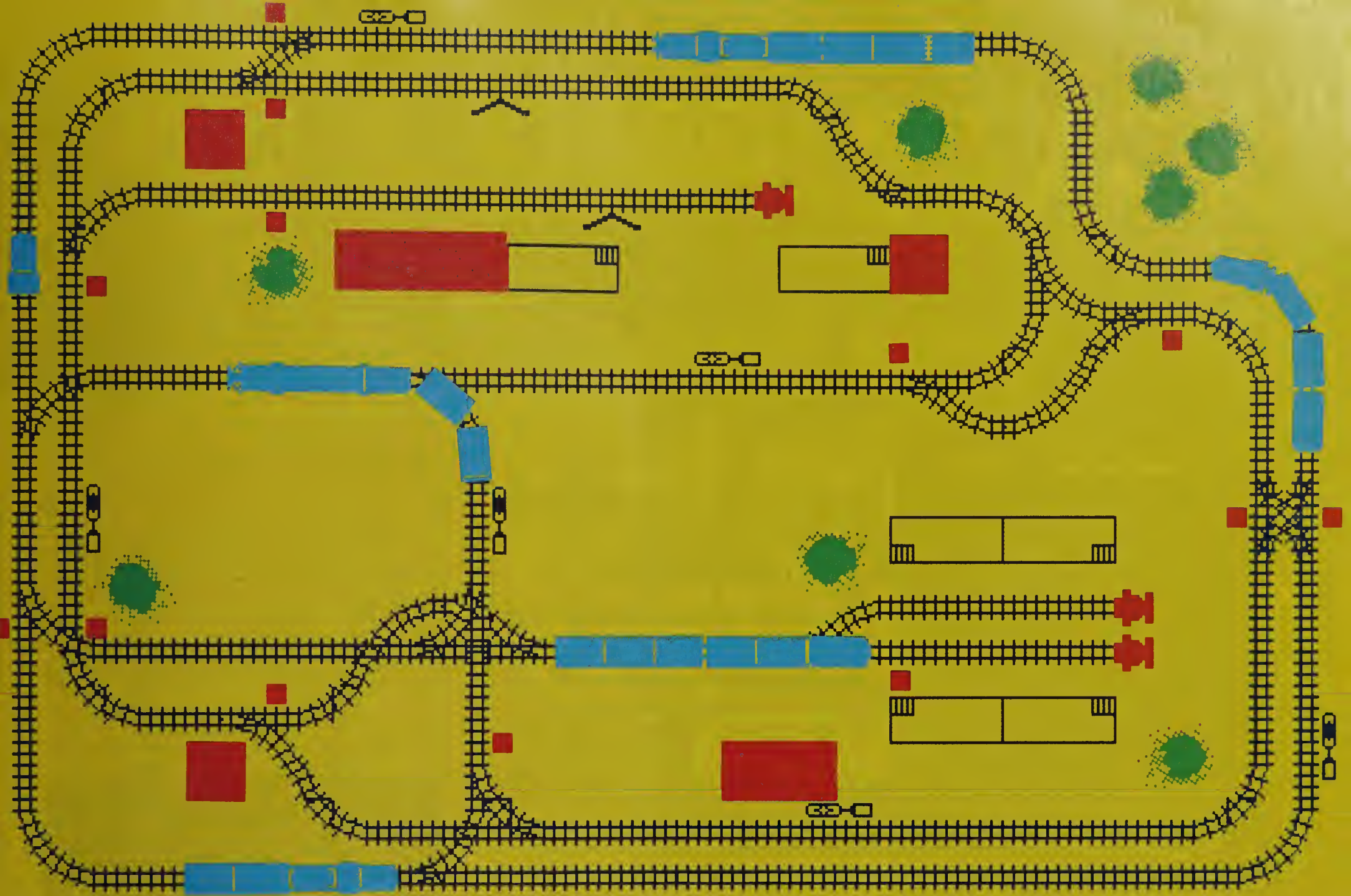
Epstein, who is 50, had never used a computer before he bought the Macintosh. "I resisted buying other models due to their complexity or the arcane codes that had to be learned to operate them," he explains. Epstein says he can teach new associates how to use the Mac in 15 minutes.

### Visible Admissible Evidence

Although Epstein uses his Macintosh primarily to produce legal documents, he occasionally prepares charts and graphs with *Microsoft Chart*. "Once I went to California to negotiate a dispute between two companies," he recalls. "I spent half a day with my client working up a series of charts based on information supplied by the opposing party. We had tables of figures showing how a manufacturer had manipulated sales figures over a period of years, making it impossible for my client to meet his sales quotas. Going over the tables in court would have taken hours and made everyone go numb, but the charts immediately showed a trend. The charts turned the negotiations around in favor of my client."

Epstein employs a full-time staff of six. He says the Macintosh could easily satisfy the needs of a larger law firm. In addition to working with *MacWrite, ThinkTank,*

*(continues on page 30)*



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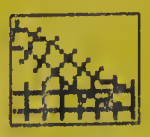

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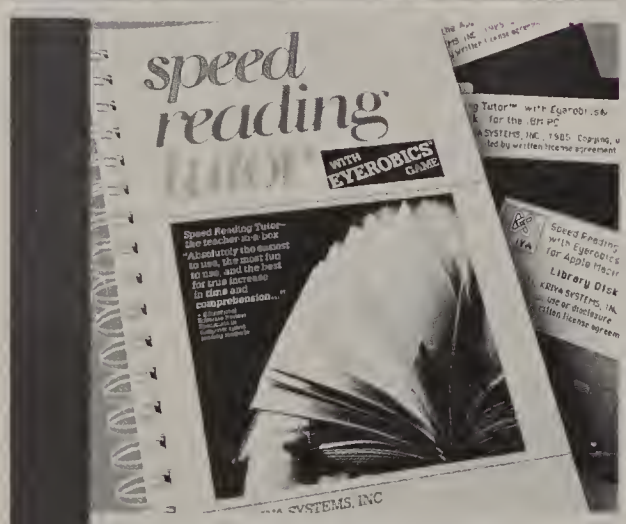


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and *Chart,* Epstein uses *Microsoft File* to store legal documents and to keep a record of how much time is spent on different projects.

Because the Mac cuts down on the time required to prepare documents, Epstein says his firm has been able to take more difficult cases than before and to take cases on a contingency-fee basis more often. "In pre-Mac days we would have turned down some of the cases we have worked on recently," he says. "They would have required too big an overhead."—*Eric Schwarz*

# High-Tech Fashion

## *For one designer, clothes make the Mac*

The next time you choose an outfit in a store, check the label because the clothing may have been designed on a Macintosh. New York fashion designer Jackie Shapiro uses *MacPaint* and *MacDraw* to design her GARB line of clothing. Shapiro, who left a position with Fiorucci in Italy to work as a free-lance designer, started using the Mac in the spring of 1984.

"The Macintosh was just right for my purposes," she says. "I had never touched a computer before I bought my Mac. I find that it takes me slightly longer to produce a drawing on the Macintosh than it does by hand, but the lines are much cleaner, and therefore the clothes come out better."

### Silhouettes on the Screen

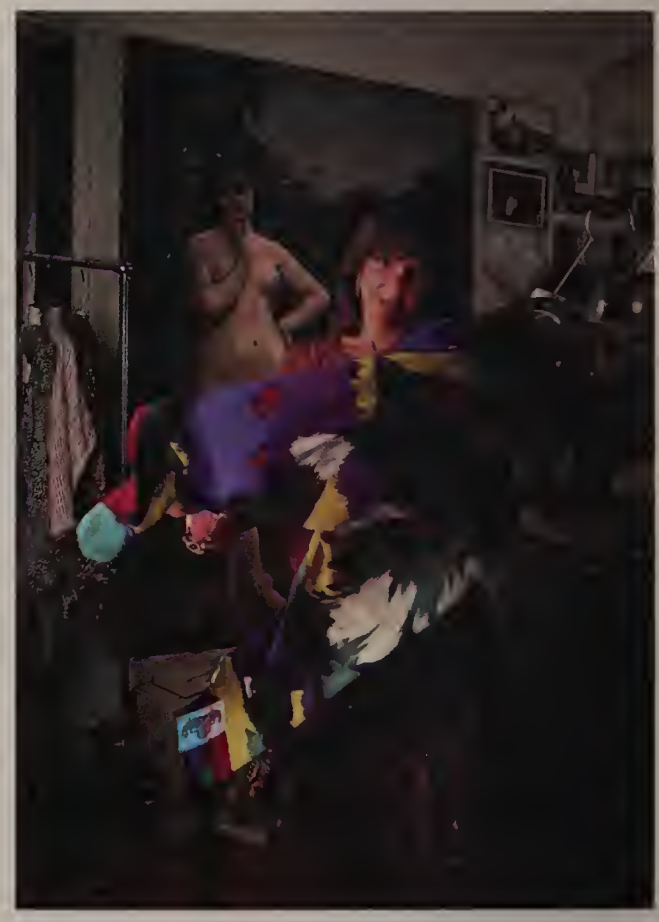
Although Shapiro uses both *MacPaint* and *MacDraw* in her work, she says *MacPaint* is the best program for her purposes. To begin designing a piece of clothing, she selects a garment silhouette from one of the hundreds of files she has created. Next she chooses a body–available in front, rear, and side views–from another set of files. She then pastes the silhouette on top of the body and adds patterns, shading, and details such as belts, pockets, and pleats.

In addition to showing a view of a garment on a model, Shapiro draws detailed front and back views of her creations to give to her dressmaker. "I access my part files, which contain various styles of cuffs, pockets, collars, buttons, and other clothing elements. I see how the parts look with the design I'm working on; if I don't like the effect, I draw something new [see 'Sum of the Parts']. That's an advantage of computer-generated design: you tend to explore more options than you would with traditional methods. And the more you explore, the better your designs get."

### Prefab Patterns

Shapiro doesn't have to draw everything from scratch in her designs. *MacPaint*'s circle tool, for example, provides a quick way to add buttons. Areas can be filled with stripes, dots, checks, and other patterns using either *MacPaint* or *Mac-*

*(continues on page 34)*



*Showing off one of her designs, Jackie Shapiro seems glad that she gave the Mac a whirl in the fashion world.*

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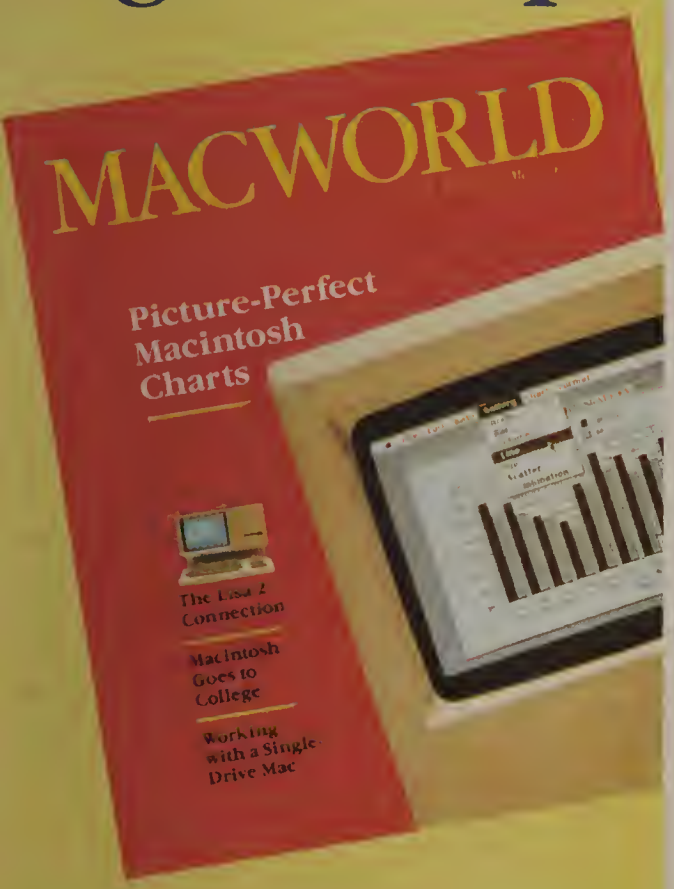


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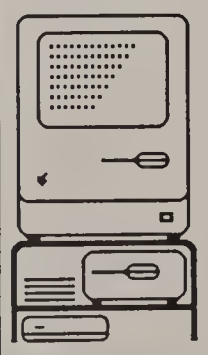

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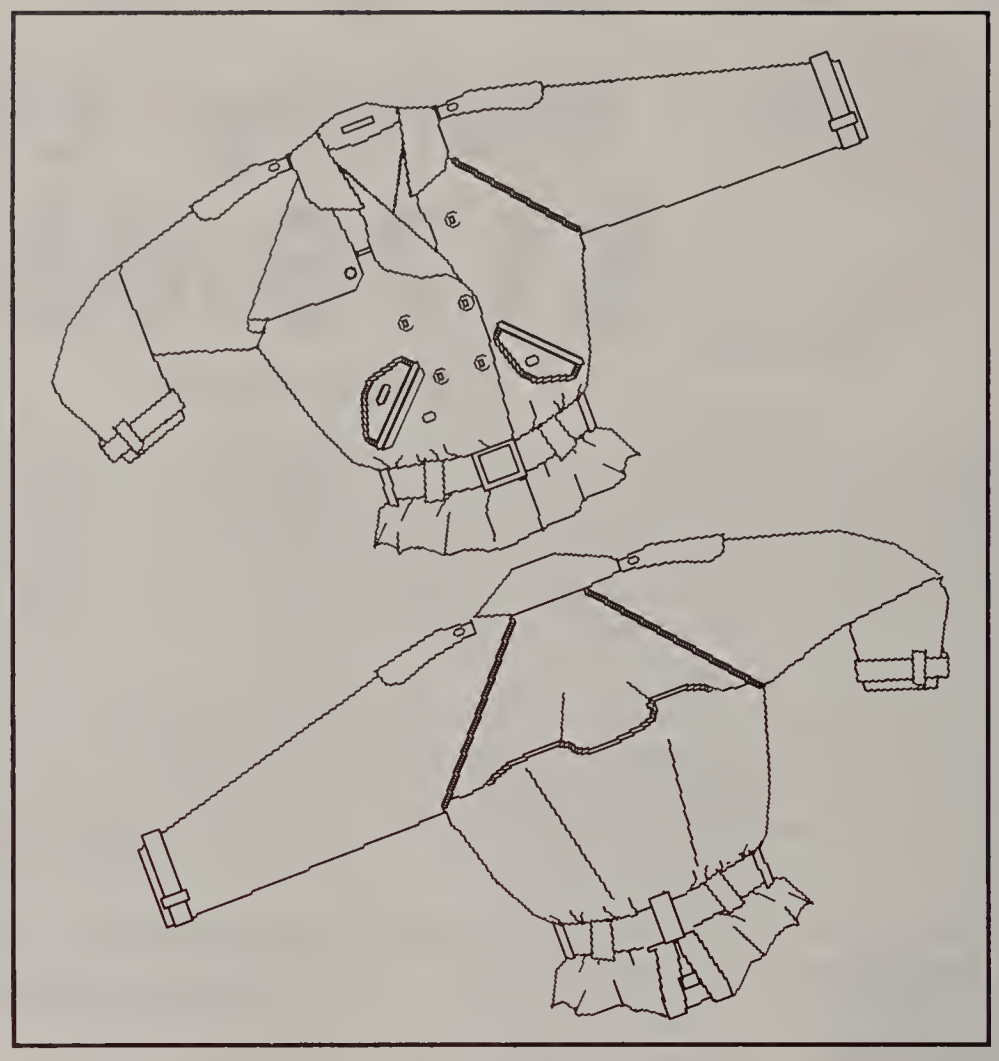


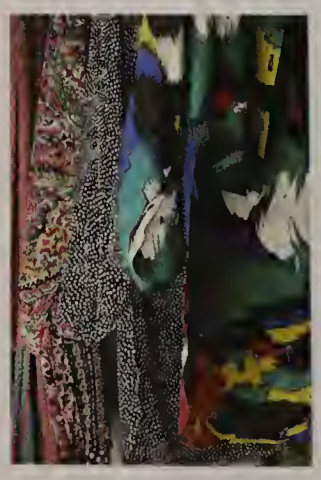
***Sum of the Parts***
*Fashion designer Jackie Shapiro used* MacPaint *to produce front and back views of this jacket. She has built up a library of hundreds of clothing parts and accessories, including sleeves, pockets, collars, and buttons, to help construct her creations.*

*Draw.* She finds *MacDraw* useful for scaling designs. "It lets me shorten or widen either an entire design or just the parts." Shapiro uses *MacDraw*'s rulers to establish a ratio between the actual size of a garment and the size as drawn.

Another handy tool is T/Maker Graphics' ClickArt Effects. This *MacPaint* desk accessory allows Shapiro to rotate shapes in small increments rather than the 90-degree rotations provided by *MacPaint.* The desk accessory also lets her stretch selected parts of a drawing.

Shapiro claims that using the Macintosh helps keep her work organized because a large number of drawing files can be stored on disk rather than on paper. "When I design a line of clothes on the Mac, I can bring up a core drawing and edit it rather than starting a drawing from scratch. Drawing by hand gets messy. I get disorganized and I can't find all the papers. The Macintosh has helped me organize my work, giving me time to design more interesting clothes."

According to Shapiro, few people in the fashion industry have paid much attention to the possibilities of computers in fashion design. "I recently attended an art expo that had a computer graphics section," she says, "but I was the only person using the Macintosh in conjunction with fashion." She feels that computers will gradually become integrated into the fashion industry, however, "and by then I'll be way ahead of my time." *–Sherri Gilman-Tompkins*



*To those who know that you don't sprinkle FatBits on your salad, Shapiro's designs can be evocative of* MacPaint*–but creating patterns that move in color on a human figure takes more than mousing around.*

*(continues on page 36)*

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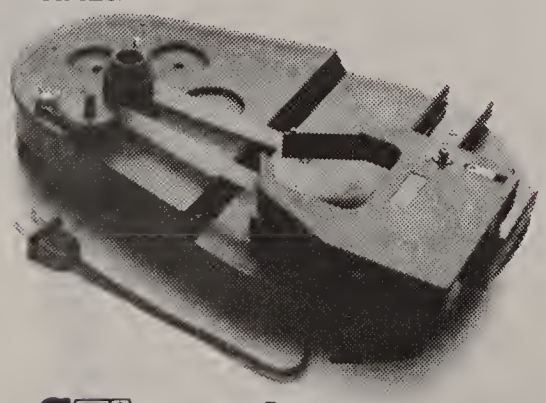

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*For pathologist and Macintosh owner Marcus Contardo, positive results mean good news for a change. Ease of use and high-resolution graphics are just what the doctor ordered for tapping on-line databases and preparing biopsy reports.*

# Medical Mac

## *A doctor examines the Mac's graphics capabilities*

A pathologist is sometimes called a "doctor's doctor" because the tests pathologists run often determine the course physicians take to treat their patients. Marcus Contardo, a pathologist at the Palomar Hospital in Escondido, California, counts a Macintosh computer among his most valuable instruments.

Contardo was no stranger to personal computers when he bought his Macintosh in July 1984. He has owned an IBM PC since 1981 and still maintains a database of medical articles on the PC. But the Mac's graphics capabilities and icon-based interface quickly made Contardo a two-computer pathologist. He has upgraded his Macintosh to 512K, and his system includes a second disk drive and a Corvus 16-megabyte hard disk.

### Modem Medicine

Contardo subscribes to Dialog Information Services, an on-line retrieval service that maintains more than a dozen medical and related databases in its electronic library in Palo Alto, California. He connects with Dialog about once a week to read the most recent medical reports and scan the latest medical journals. He also turns to Dialog when he needs information on a particular subject, such as hepatitis.

Contardo uses *MacTerminal* for his communications needs and finds the program easier to operate than the communications software he runs on the IBM PC. Contardo, who doesn't like to type, prefers issuing commands with a click of the mouse. *MacTerminal* saves him time–and with Dialog, time is money. The average database fee is $65 per hour, and some database fees run as high as $165 per hour.

### Biopsy Graphics

Contardo has also found medical applications for *MacPaint,* which he used to design a skin biopsy form. "The mapping of a skin biopsy lends itself to a visual report because a tumor grows in erratic ways," he says. "A surgeon wants to remove the least amount of skin necessary for a successful operation."

When a Palomar Hospital surgeon removes a skin tumor, it is sent to the pathology lab. A pathologist determines if the

*(continues on page 38)*

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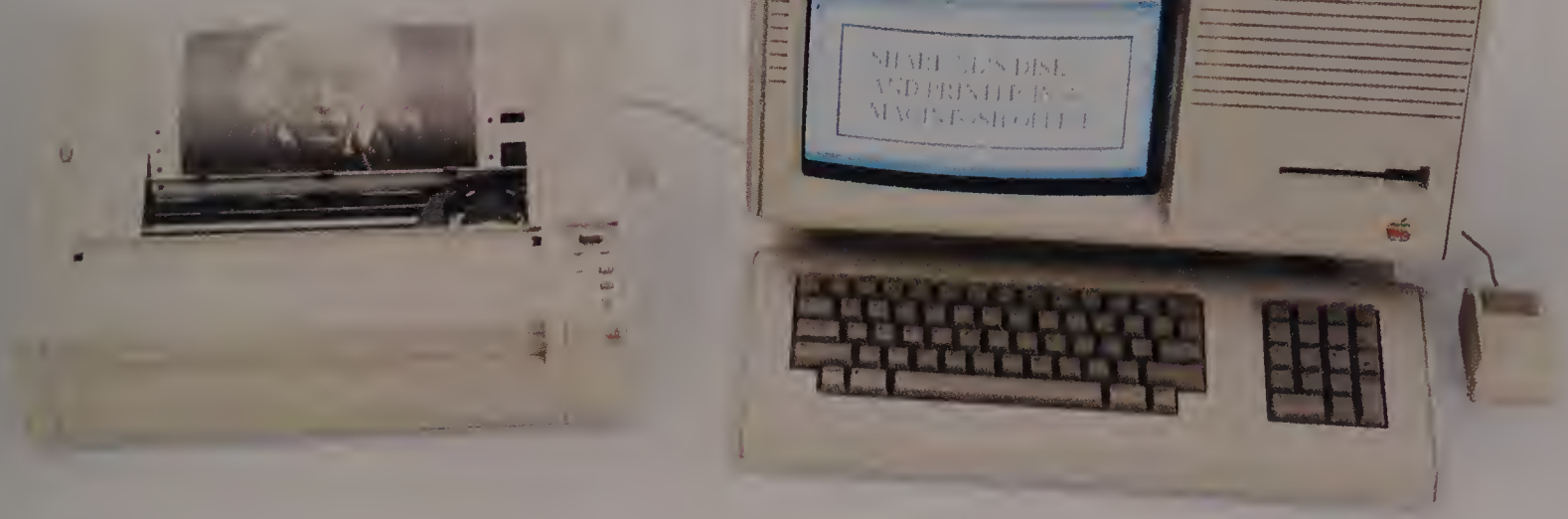

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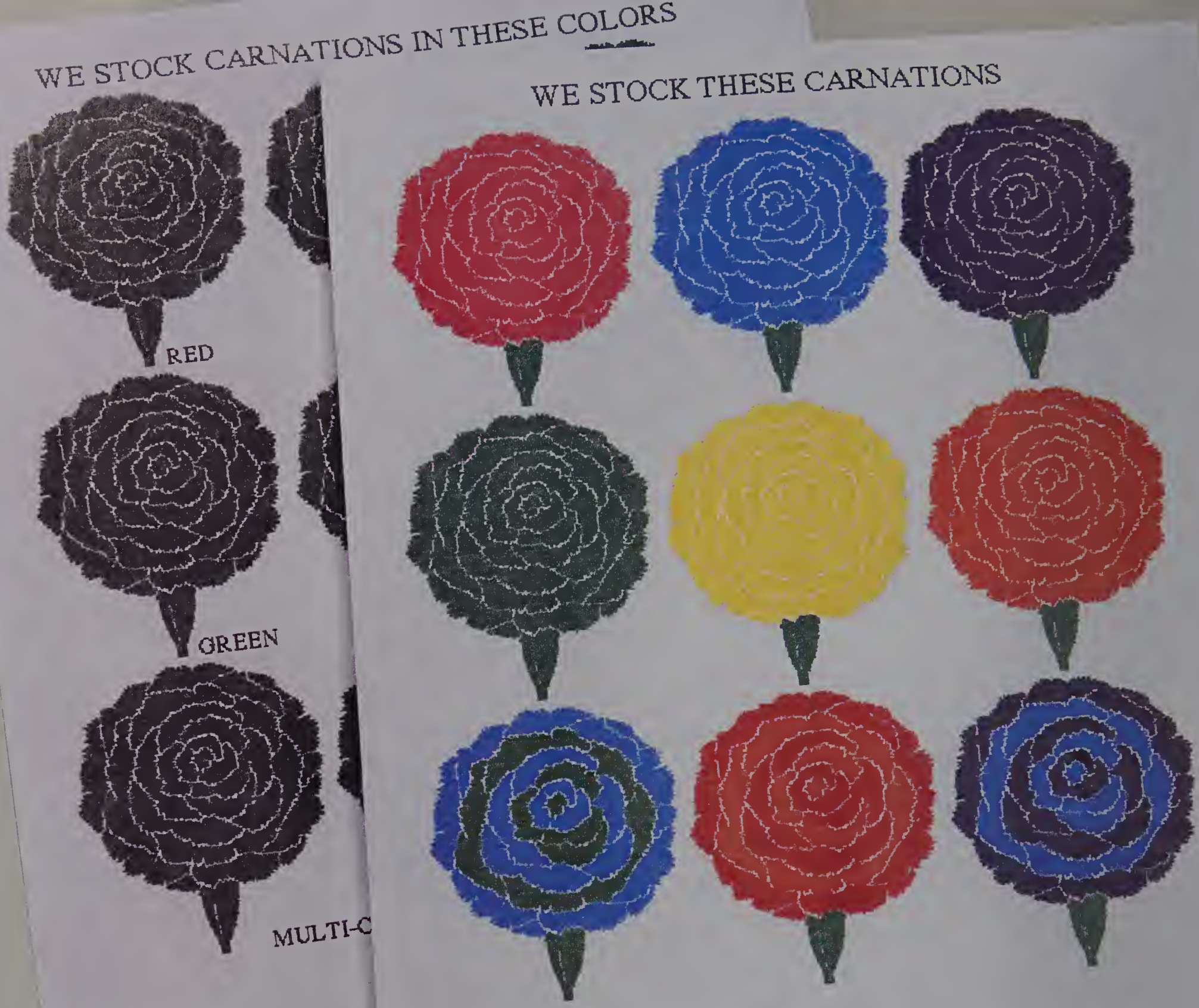


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entire tumor has been removed by checking for *clear margins,* a border of normal skin cells surrounding the cancerous cells. Using Contardo's form, a pathologist draws the tumor freehand and shows the surgeon where more skin, if any, needs to be removed. The form relates the tumor to the face of a clock. For example, a biopsy may fail to show a clear margin at one o'clock.

Contardo also created an endoscopy form on his Macintosh with representations of the stomach and the colon. An endoscope is a medical instrument that uses fiber optics to visually scan the interior of a hollow organ. Through the endoscope, a doctor can extract tissue samples for testing. "Frequently a surgeon selects more than one sample for biopsy," says Contardo. Surgeons use the endoscopy form to mark the site where each biopsy originated. The endoscopy form becomes part of the patient's record, to work like a map if more surgery is required. The visual format is more succinct than a written description, Contardo says.

Hospitals often hire artists to design forms, according to Contardo, but the Mac let him do the job himself. "The endoscopy form went through four revisions before it was acceptable," he remembers. "With each revision, the Macintosh let me salvage part of the form so that I didn't have to start from scratch each time."

Although Contardo was one of the first doctors at the 350-bed Palomar Hospital to use a computer on a regular basis, he says that doctors assisted by computers will soon be the rule rather than the exception. Physicians have begun to discover the advantages of computers. Companies that sell hardware, medical software, and information services such as Dialog often display their wares at medical conventions and seminars. But Contardo says the big changes are taking place in colleges and universities, where computers are becoming common fixtures in science departments. Future doctors become computer-literate even before they send in their medical school applications.—*Katie Seger*

*(continues on page 40)*


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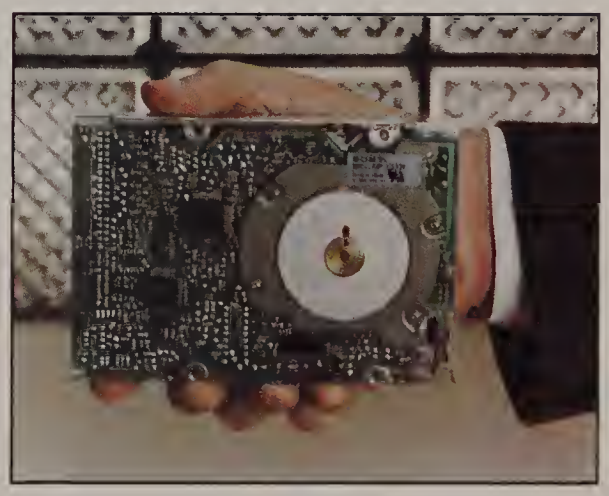

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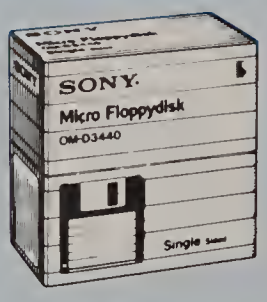


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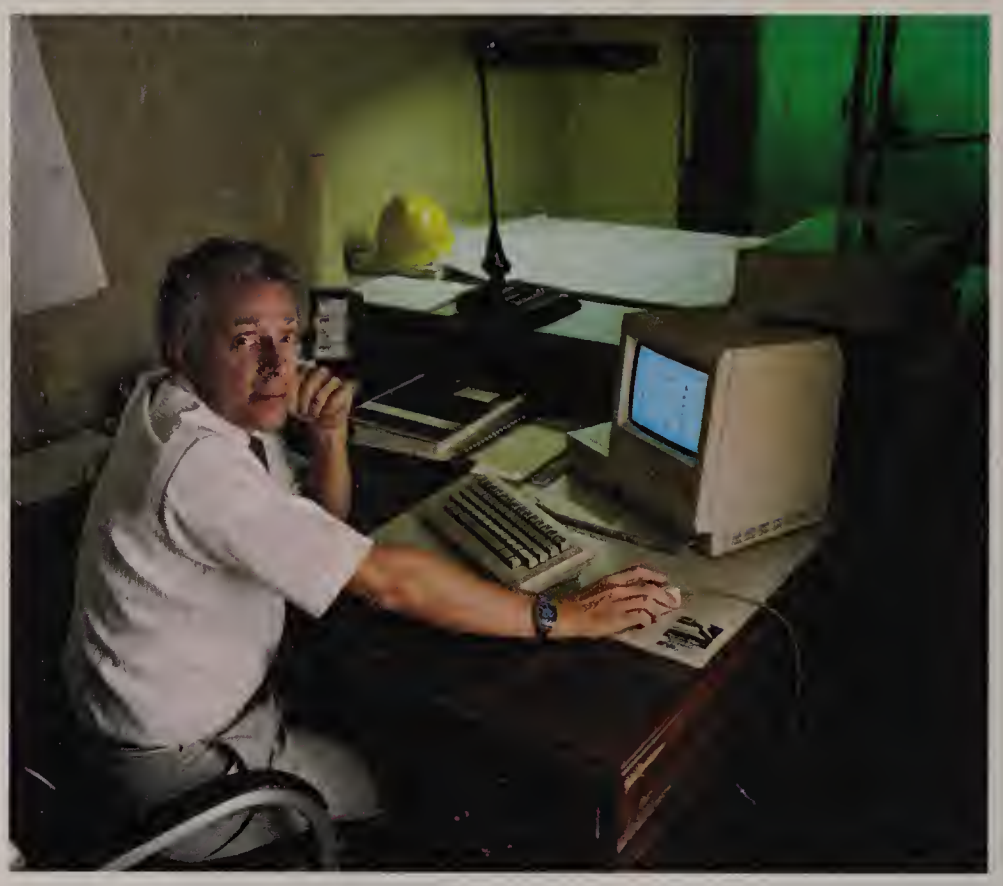

*Engineer Joe Nagy couldn't wait for a Macintosh drafting program, so he used* MacPaint *to report the progress of a multi-million-dollar development project. With* MacDraw's *release he no longer has to count pixels for accuracy.*

# Cornerstone Macintosh

## *An engineer gets in on the ground floor*

Civil and structural engineer Joe Nagy thinks about problems visually. For several years Nagy was eager to integrate personal computers with his work but was put off by their cost and limited graphics capabilities. Nagy made his move to computer-aided drawing with the purchase of a Macintosh in March 1984. Since then, drawing with a Mac has given him the ability to look at his projects in a new light.

When he bought his Macintosh, Nagy was the project engineer for a $300-million development project called Tabor Center in downtown Denver. Issuing progress reports to the project director was part of his job. Nagy began experimenting with *MacPaint* for drafting. "I made a drawing showing the outline of the buildings," he says, "and then as each floor of a building was poured in concrete, I'd shade it in. I'd also type in scheduled and actual completion dates for each floor."

He updated the drawing regularly and used it as a visual progress report for his supervisors. "You could see what we did in a given month–how many floors we poured and whether they were on time," he recalls.

Of course, *MacPaint* wasn't designed as an architect's tool, so Nagy had to do some extra work to make the drawings accurate. "To make sure the drawings would be in proportion, I used FatBits to count the number of pixels between each floor," he says.

### Making a Mint

By the time drafting tools were out for the Macintosh, Nagy had used his *MacPaint* drawings to land a job with the U.S. Mint. He is the construction engineer on an addition to the Denver mint facility. "My computer background is one of the things that helped me get the job," he says. "The people in Washington hadn't seen anybody who had done anything like my *MacPaint* progress reports."

When he started his new job, Nagy was testing a prerelease version of Apple's *MacDraw,* and he quickly made use of its features. "*MacDraw* made the difference--especially the ability to draw something to scale," he says. "I could draw the mint's floor plan in *MacPaint,* but I'd spend a lot of time counting pixels to make the proportions accurate. *MacDraw* is a lot faster." As before, Nagy uses his *MacDraw* files as visual progress reports.

*(continues on page 42)*

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–Steve Hughes, *Apple User Magazine*, August, 1985

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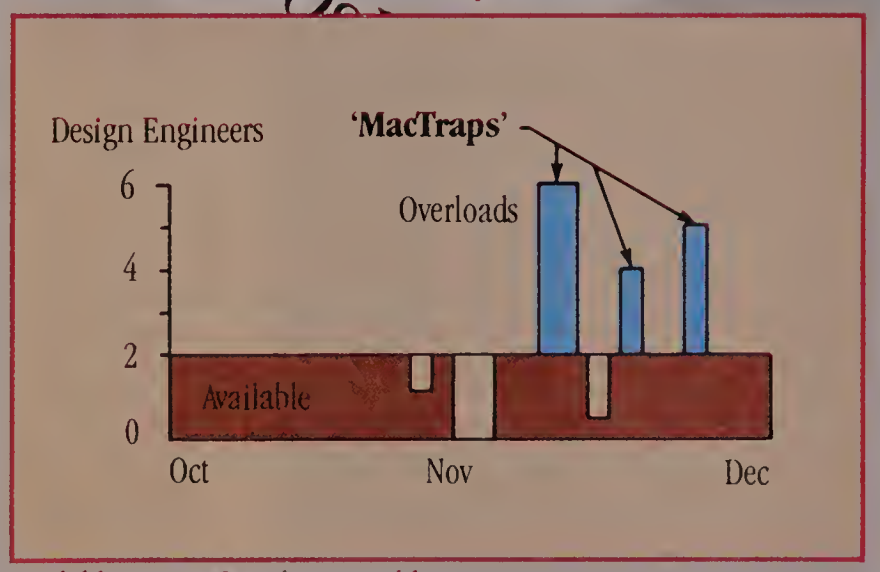


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The Mac has become a part of Nagy's workday. "Anytime I have to do some sketches, I use the Mac," he says. "I had to do a presentation for some people in Washington on how many stacks of pallets holding bags of coins would fit into a fenced area in the vault. I just sketched the area, drew two pallets, and then duplicated them across the drawing [see 'Pallets on the Floor']."

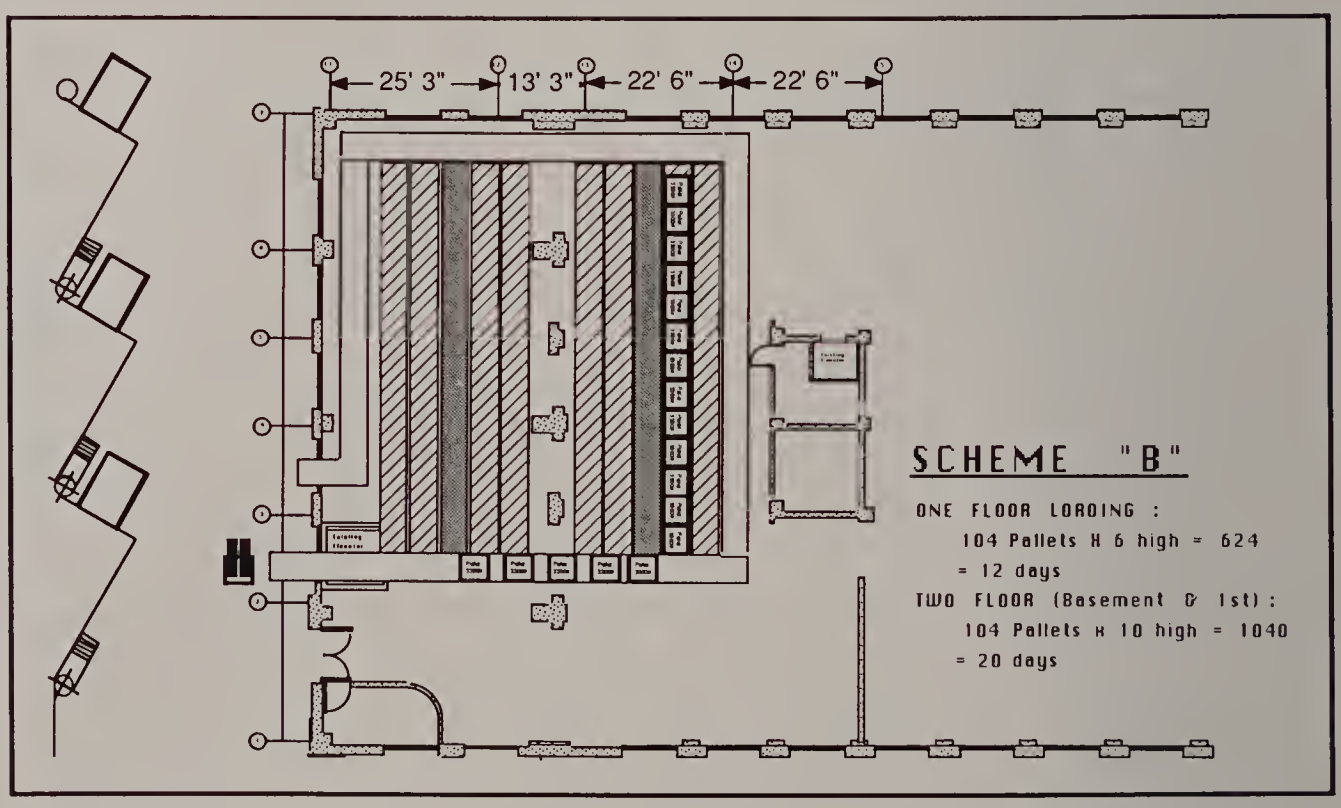
The Macintosh's ability to change drawings quickly and test alternative layouts has even affected the final design of the mint addition. Originally, the equipment that produces the coins was in two locations, but Nagy wanted to rearrange things. "We had the idea to put all the equipment in a line—in the flow in which the coins were moving during the production process," he says. "I moved some of the equipment around on the drawing and sent the changes to Washington. The drawing made a heck of a difference. Everybody said the arrangement I proposed was something they hadn't thought about."

**Flexible Future**

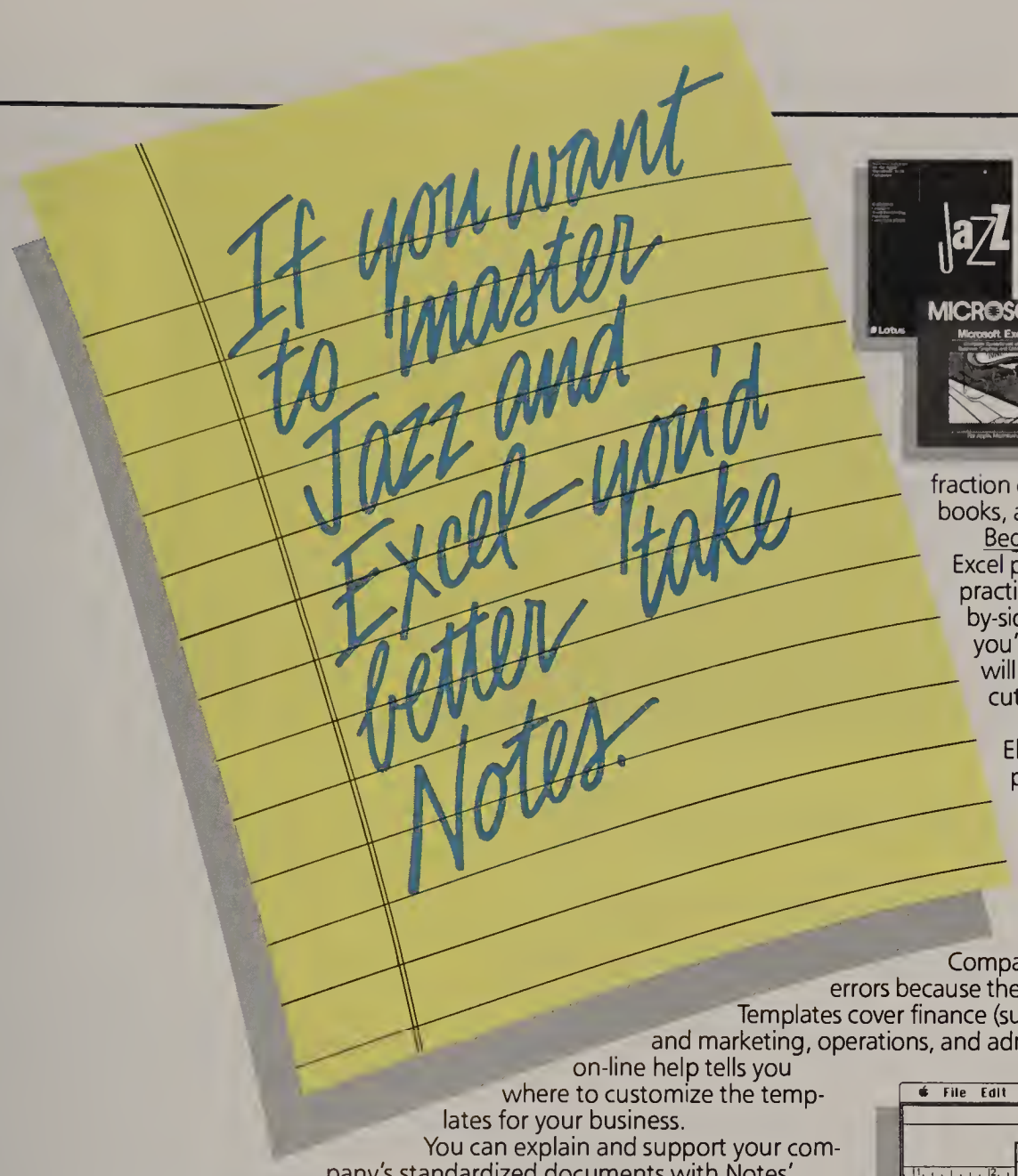
Nagy will be able to put his ideas on paper with even more flexibility in the future. He's currently testing *MacDraft* from Innovative Data Designs. "The best thing about it is a zoom feature that lets you work with portions of a drawing at up to eight times magnification," he says. "It makes drawings look more professional."

Nagy is looking forward to adding more hardware and software to his repertoire, including a General Computer Company HyperDrive, Micro Planning Software's *MicroPlanner* project management program, and a program that will allow him to connect his Macintosh to the mint's plotter. An avid beta-tester who enjoys putting prerelease versions of software through their paces, Joe Nagy will no doubt continue to think of innovative ways to use his Macintosh at the U.S. Mint.—*Charles Rubin*

*(continues on page 44)*




***Pallets on the Floor***
*Construction engineer Joe Nagy uses* MacDraw *and* MacDraft *to figure out the most efficient use of space in the U.S. Mint in Denver.*



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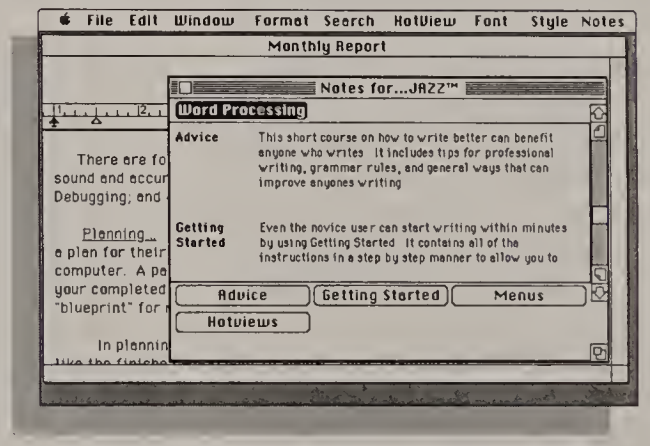


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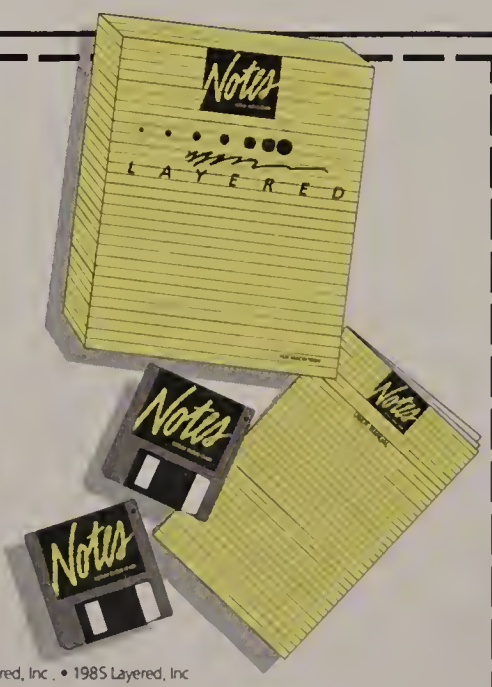


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*They wanted to use computers in their architecture and planning firm, but Matt Guthrie (left) and Bob Forsher neither needed nor could afford a dedicated drafting system. Macs, photocopiers, and traditional tools adequately meet the firm's current requirements.*

# The Best-Laid Plans

## *An architect and a planner use the Mac to dodge some drafting*

The term *appropriate technology* usually evokes images of low-tech windmills and waterwheels. Where the wind blows or the water flows, windmills or waterwheels sometimes make more sense than oil-burning generators. But appropriateness is not always incompatible with advanced technology. In San Rafael, California, the architectural and planning firm Forsher & Guthrie uses the Macintosh in combination with xerography and traditional drafting skills to prepare building plans. The combination is appropriate to the needs and the resources of the small firm.

In the almost two years that architect Bob Forsher and planner Matt Guthrie have been in business together, they have worked on plans for retail stores, an industrial park, and–their biggest contract so far–six apartment complexes of from 300 to 400 units each. The partners keep track of budgets on *Multiplan* and follow the progress of each contract on *MacProject*.

### No Time for Tedium

Forsher and Guthrie didn't wait until professional drafting software for the Macintosh, such as *MacDraw* and *MacDraft,* became readily available before taking advantage of the Mac's graphics capabilities. As a result, the ten-person firm–Forsher, Guthrie, and eight employees–runs *MacPaint* on two 128K Macs to draw planning symbols and construction details. Planning symbols represent common features such as trees and indoor furnishings; construction details zoom in on the structural dimensions and material specifications of foundations, walls, rafters, and the like (see "Plan Detail"). For example, concrete tilt-up panels, which are prefabricated walls with reinforcing steel rods, need to be carefully designed and specified to prevent cracking and ensure strength. Drawing symbols and details each time they're required on a plan is repetitive, time-consuming work.

Instead, Forsher & Guthrie prints *MacPaint* pictures of planning symbols and construction details on the Imagewriter and then photocopies the pictures on self-adhesive, peel-back paper, enlarg-

*(continues on page 46)*

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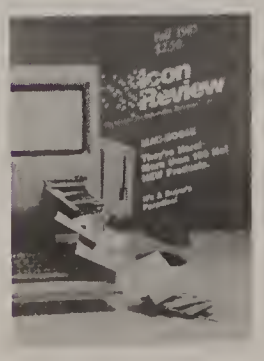


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ing or reducing them as they are copied. Reducing the printouts results in higher resolution than that of same-size photocopies. Draftspeople cut out and peel back the symbols and details with X-acto knives and stick them onto the plans where required. The firm has collected a disk library of boilerplate *MacPaint* drawings that can be customized for each plan.

"If we had someone draw all those details by hand, a full-size drawing would take at least a week," says Guthrie. "Now we can do big drawings in half a day. Our Macs have enabled us to do an incredible amount of work while remaining a relatively small office." Text that states specifications and annotates plans is prepared in the same way, although the major features of a plan are still drawn by hand.

### Blueprint of Efficiency

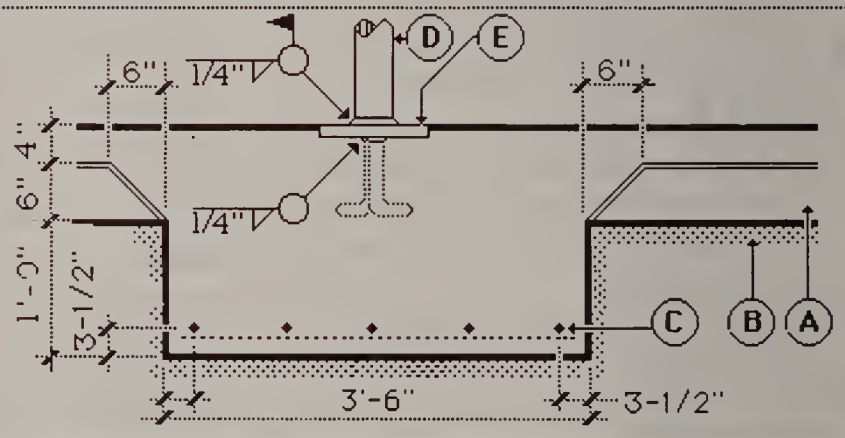
When a plan is finished, Forsher & Guthrie sends it out to a stat house for blueprinting. Any changes to the blueprints requested by the client or the contractor or required by the city planning office are made on disk. The revised construction details are printed, photocopied, cut out, and affixed to the original plan, and new blueprints are made of the revised sheets.

The time saved, Forsher says, can be valuable, particularly when the changes need to be reviewed and approved by the local planning office, which is part of a predictably sluggish bureaucracy. "We're talking about projects that cost a lot of money," he explains, "when delays of even one or two days can really hurt because of interest charges."

Forsher looks forward to a time when his firm can electronically share building plans and other data with the civil engineering companies involved in big construction projects. The planning and engineering offices use much of the same information, and one depends on the other for the progress of its own work. In the meantime Forsher & Guthrie will likely be using *MacDraw* or *MacDraft* with a plotter—an appropriate next step in the company's use of technology.—*Jeffrey S. Young* □

***Plan Detail***
*This* MacPaint *drawing of a column footing is one of numerous construction details that the architectural and planning firm of Forsher & Guthrie photocopy onto self-adhesive paper and affix to building plans where required.*

FOUNDATION/FLOOR SLAB
PIPE COLUMN FOOTING — 5.0




| KEY | DESCRIPTION |
|---|---|
| A | Typical slab construction |
| B | Engineered fill |
| C | 4-#4 each way, equally spaced |
| D | 3-1/2" dia. X-str pipe column |
| E | 9"sq. x 5/8 " thick steel plate with 2- 3/4" dia. x 12" AB welded to bottom |

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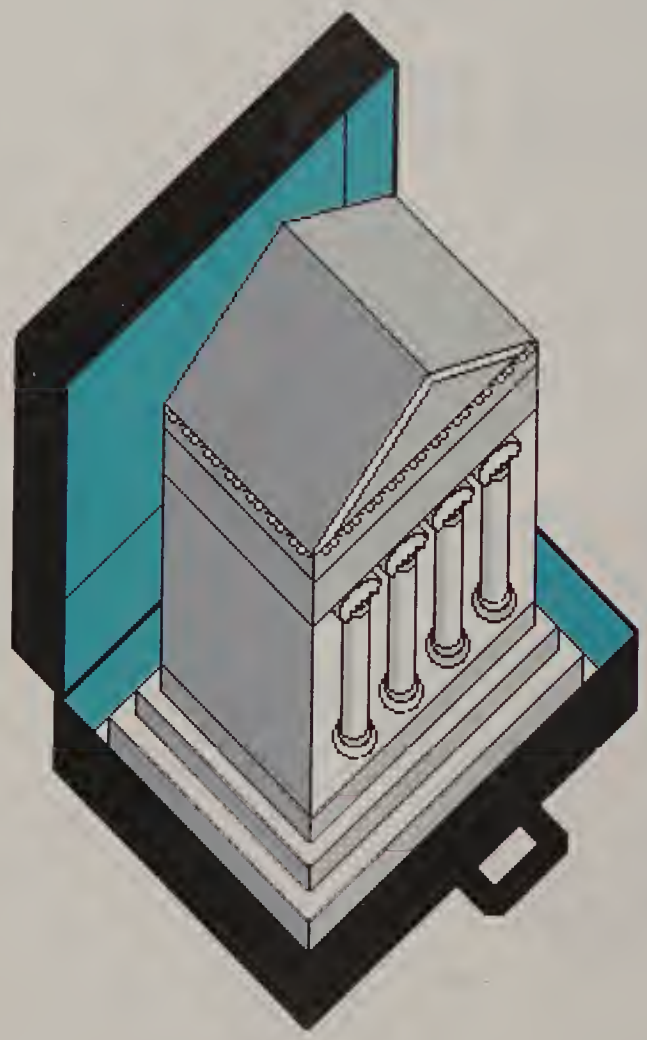
# Banking on the Mac



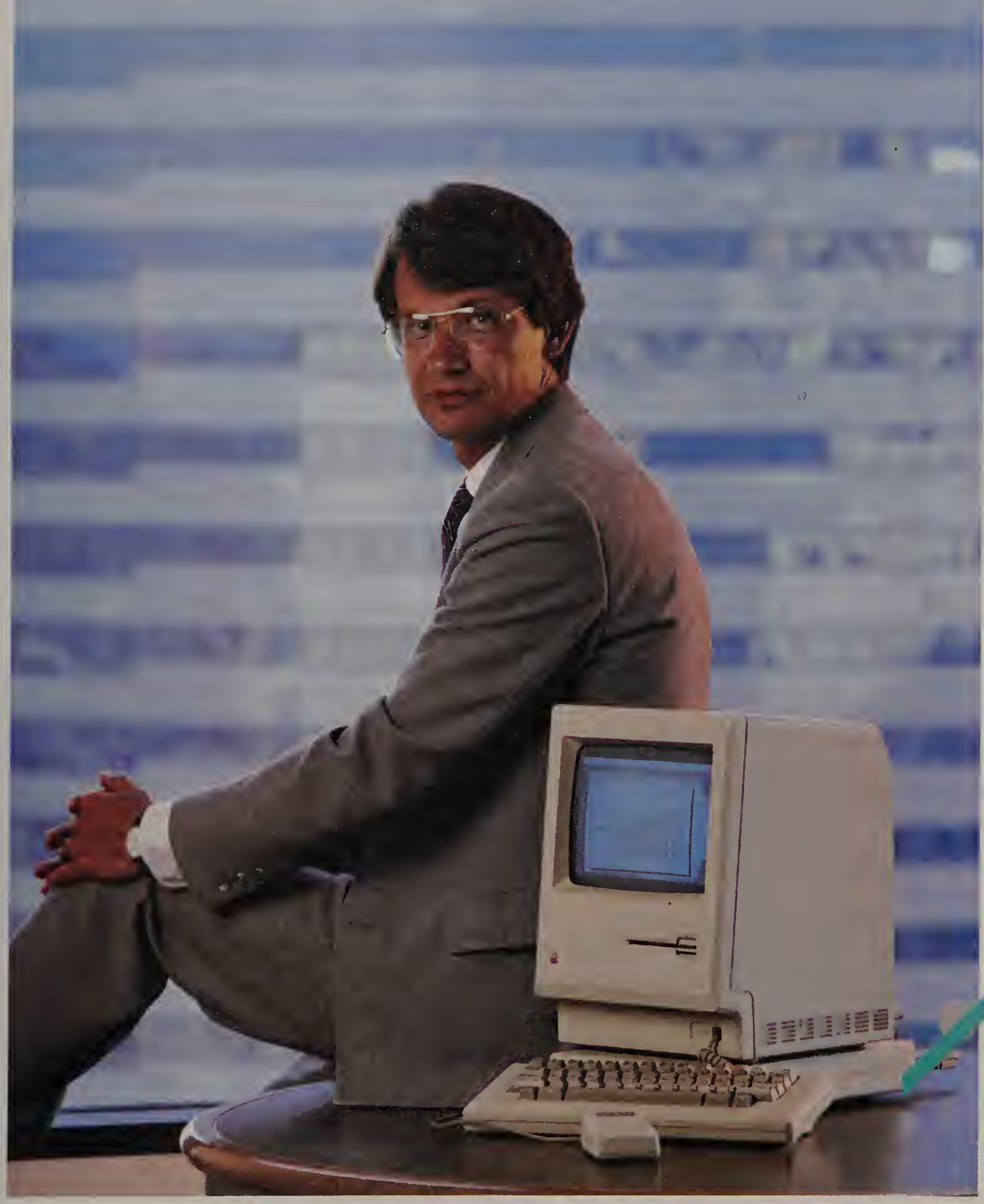
***Lon Poole***

*In January 1985 Apple sold 1000 Macintoshes to Seafirst Bank, formerly Seattle First National Bank. The sale to Seafirst, an independent subsidiary of Bankamerica Corporation, the nation's second-largest financial institution, marked the first major acceptance of the Mac for use in an office setting.*

The decision to purchase Macintoshes was made by the bank's computer technology experts, led by Timothy Turnpaugh, senior vice president and manager of the operations technology division, and Louis Mertes, executive vice president and manager of the operations group.

Late in the summer of 1984, Turnpaugh and Mertes decided to revamp Seafirst's computing services. At that time the bank had a hybrid IBM/Honeywell mainframe and an eclectic mixture of about 170 personal computers–from Apple IIs to IBM PCs to Zenith Z89s–that were distributed among a small cadre of computer enthusiasts. Only some of the personal computers were connected to the bank's mainframe. "The time had arrived to move computing beyond technicians and hobbyists to people who could make use of the tool to do their jobs better," comments Turnpaugh. "'Power to the people,' we jokingly call it here."

The initial plan involved mainframe programs for electronic mail, database query, word processing, and data entry for electronic form generation. Thousands of employees in the two headquarters buildings and in 167 branch offices would have access to the programs through IBM 3178 dumb terminals connected to the bank's statewide network. "If you have a phone, you ought to have a terminal," was Mertes's reasoning.



*Timothy Turnpaugh, Seafirst's senior vice president and manager of the operations technology division, helped lead the bank to purchase thousands of Macintoshes for employees at all levels. Since March 1985 the company has installed 80 to 100 Macs a month.*

### Getting Smart

Dumb terminals by themselves cannot perform tasks such as spreadsheet calculations, word processing, and the creation of graphics. So Turnpaugh and Mertes investigated personal computers that could provide those three local functions and also serve as terminals connected in a network to the bank's mainframe.

Cost, however, was on the side of dumb terminals. Turnpaugh notes that two cost factors come into play when personal computers and dumb terminals are compared: the cost of the device itself and the cost of training people to use it. Training people who are not computer enthusiasts to use a personal computer can be prohibitively expensive. "A lot of corporate America hasn't realized yet the hidden cost of training," Turnpaugh says. "Hardware is not the most expensive leg of the operation; training is." With a fixed budget, he and Mertes figured that giving the less-expensive dumb terminals to more people would boost overall productivity more than giving personal computers to fewer people. They were ready to sacrifice local computing functions for the cost savings of a dumb terminal network.

Turnpaugh says that two members of the operations team were pushing hard for the Macintosh, but the bottom line still argued for dumb terminals. Then last fall Mertes met Steve Jobs in New York. They talked about the Mac and Seafirst's plans, and Mertes commented that there wasn't a personal computer inexpensive enough to distribute at Seafirst instead of dumb terminals–not to mention the cost of the training involved. Their meeting began the negotiations between Seafirst and Apple Computer that led to Seafirst's decision to purchase a substantial number of Macs.

Turnpaugh's reaction to the Macintosh was positive. The cost per unit was low enough to be attractive, and he says the Mac was "undoubtedly the easiest" computer to learn how to use. Mertes likens the difference between the Mac and another computer to the difference between racquetball and tennis. "To be a mediocre tennis player, you are almost required to take lessons; to be a mediocre racquetball player, you can get out, beat the ball around, and basically pick it up in no time. You can have fun with very little instruction, but there's room for sophistication and expansion."

### Popular Choice

In January Seafirst decided to go with the Macintosh. The initial commitment was for 1000 machines, but the bank plans to install a total of 3000 to 3500 over the next two years.

The first Macintoshes were installed in March 1985, and installation has proceeded at the rate of 80 to 100 Macs a month. "That's as fast as we can get the thing connected to our network," Turnpaugh explains. In some cases the computers arrive before the network wires are strung, so people can get used to *MacWrite* and other Macintosh software.

*'In corporate America, training–not hardware–is the most expensive leg of the operation.'*

Deployment of the Macs is determined by those who need to use them, and the computers are not viewed as status symbols. "In many cases the people who need them most are way down in the organization, not the senior people," Turnpaugh explains. "With these people using the Mac, we're going to cut in half the time it takes to process a loan or increase sales."

Turnpaugh and Mertes explained the Mac's capabilities to the executive vice presidents who head the bank's divisions, and asked for a list of employees who should use the machines. The list that came back included a wide range of individuals, from the chairman of the board and executive vice presidents to secretaries, sales representatives, and marketing managers.

### All Macs Are Installed Equal

Everyone at Seafirst gets a 128K Macintosh with *MacWrite* and *MacPaint,* as well as an AppleLine box that connects the Mac via *MacTerminal* to the bank's statewide network. Software that handles electronic mail, database query, and data entry resides in a mainframe computer accessible through the network.

The mainframe link minimizes Seafirst's need for AppleTalk local networks with file servers and printers. For example, Xerox laser printers connected to the mainframe as part of the bank's network make LaserWriters unnecessary. Secretaries and other employees who produce a good deal of written material receive Imagewriters, but the bank has purchased few external disk drives, 512K Macs, hard disks, or modems.

Turnpaugh says that Seafirst decided against initially installing 512K Macintoshes for several reasons. He and others in the operations group correctly predicted that the 512K model would come down in price, that business programs requiring 512K would not be immediately available, and that most people at the bank who use the Mac have yet to exhaust the capabilities of the 128K machine–even with extensive spreadsheets.

Seafirst plans to gradually install 512K Macs for those who have reached the limits of the smaller model. The 128K Macs will be turned over to employees who are learning to use the computer.

Apple's *MacProject* and Microsoft's *Multiplan* and *Chart* are available to employees who want them. Purchases of Lotus's *Jazz* and Microsoft's *Excel* are also in the works for people with the need and the appropriate machine. Turnpaugh remarks, "For the short term and intermediate term, we want to get as many people as possible using the Macintosh in its simplest form, and then we'll evaluate the performance and the price of other hardware."

*Seafirst executive Louis Mertes thinks Macintoshes are a better investment than dumb terminals. Macs perform tasks that the terminals cannot, such as spreadsheet calculations, word processing, and graphics creation.*

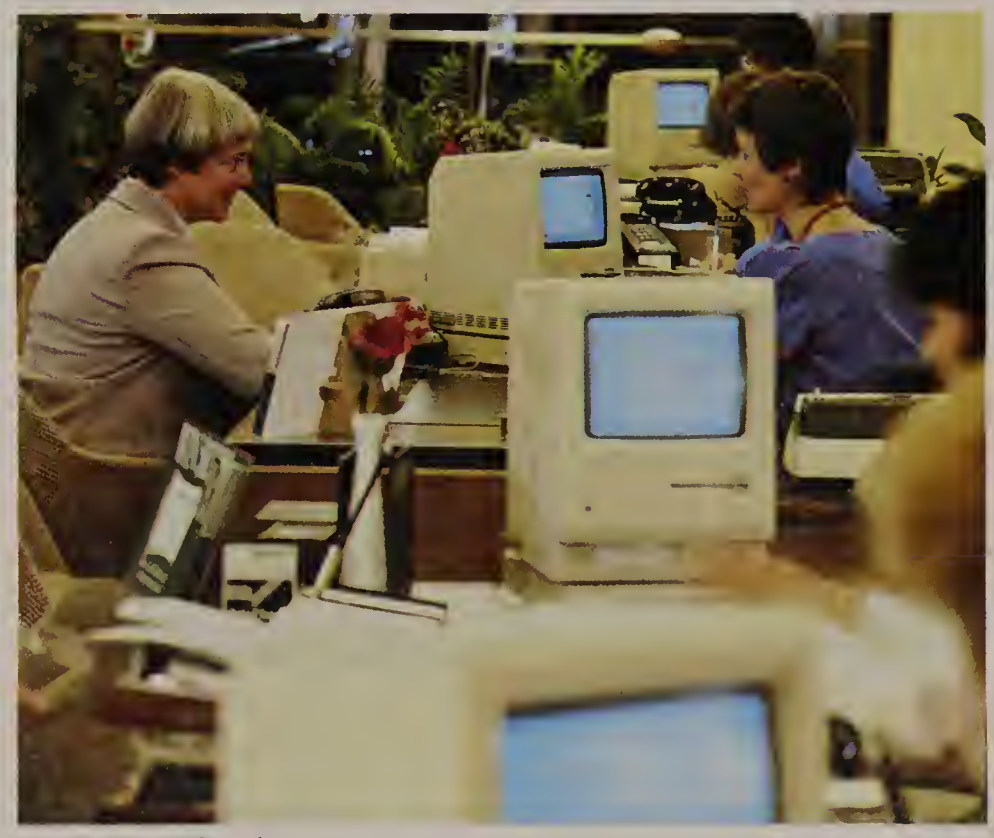
**Ease of Training**

Seafirst handles its own training for Apple software, but most people require little formal training. For example, Turnpaugh showed his secretary how to use *MacWrite* and "had her fully proficient in 45 minutes." The secretary was adept at using a typewriter and had used a terminal before, but she had never used a word processor.

Local computer dealers train Seafirst personnel to use *Multiplan, Chart,* and other software. In addition to the basics of the programs, solutions to actual Seafirst business problems are tackled during training. Once the initial training is over, Seafirst encourages people to experiment. "The last thing we want to do is bottle up creativity," says Mertes.

Of vital importance to ongoing training is what Mertes calls *crosstalk,* employees sharing what they've learned about the machines, the software, and the system in general. Without this crosstalk, 500 people might have to solve exactly the same problem 500 times. To further encourage the exchange of discoveries, Seafirst has started its own user group.

The bank faces special training and support problems with its branch offices, especially the ones located far from its Seattle headquarters. "You can't go to a branch, close its doors, and stop doing business for 3 hours while you train the entire staff," Turnpaugh explains. Instead, a selected person from the branch travels to Seattle and goes through a couple of days training to become a "paratrainer." He or she goes back "with a pile of documentation" and trains the rest of



*With Macintoshes deployed throughout the bank, as on these desks at the home office, Seafirst expects to cut in half the length of time it takes to process a loan.*

the people at the branch. When questions arise, the paratrainers are there to provide answers in person. "Like paramedics, they can do everything but the surgery, as it were," Turnpaugh says.

### Winds of Change

By introducing computers on such a large scale, Seafirst is trying to change the culture of the entire firm. However, the change is not by mandate. Some employees dictate correspondence more effectively than they can type it, while others discover that they prefer to work at the keyboard. A secretary can still choose whether to send the occasional 15-page document to the word processing department or prepare it on the Macintosh.

The typewriter, which to many people represented the height of automation, is a dinosaur at Seafirst, although it is better suited than the Imagewriter for tasks such as creating file folder labels. The Imagewriter's print quality is under close scrutiny. "More and more people are feeling comfortable with it," Mertes states. It takes some getting used to. Materials for clients and other external correspondence are printed on the mainframe's laser printers. But for internal correspondence, which Turnpaugh estimates comprises 80 percent of the firm's total correspondence, the Imagewriter is unquestionably acceptable. Workers with Macs have virtually stopped typing memos on the bank's memo forms. Instead, they print out a memo written in *MacWrite* with a *MacPaint* reproduction of the bank's logo at the top.

*Though the Mac is easy to use, the bank set up a training system that includes in-house sessions, training by local computer dealers, a user group, and paratrainers for the outlying branches.*

### Electronic Mail

These days, much less internal Seafirst communication becomes ink on paper anyway, thanks to the electronic mail network managed by the bank's mainframe. Electronic mail efficiently replaces many face-to-face meetings as well. It helps people avoid scheduling conflicts and allows individuals in the network to respond to messages when it's most convenient. Furthermore, electronic mail is more reliable than telephone tag. The recipient may see a message 30 seconds after it was sent or may read it the following morning; in either case the sender can move on to something else as soon as the message is sent, with no worries about unanswered phones or undelivered messages.

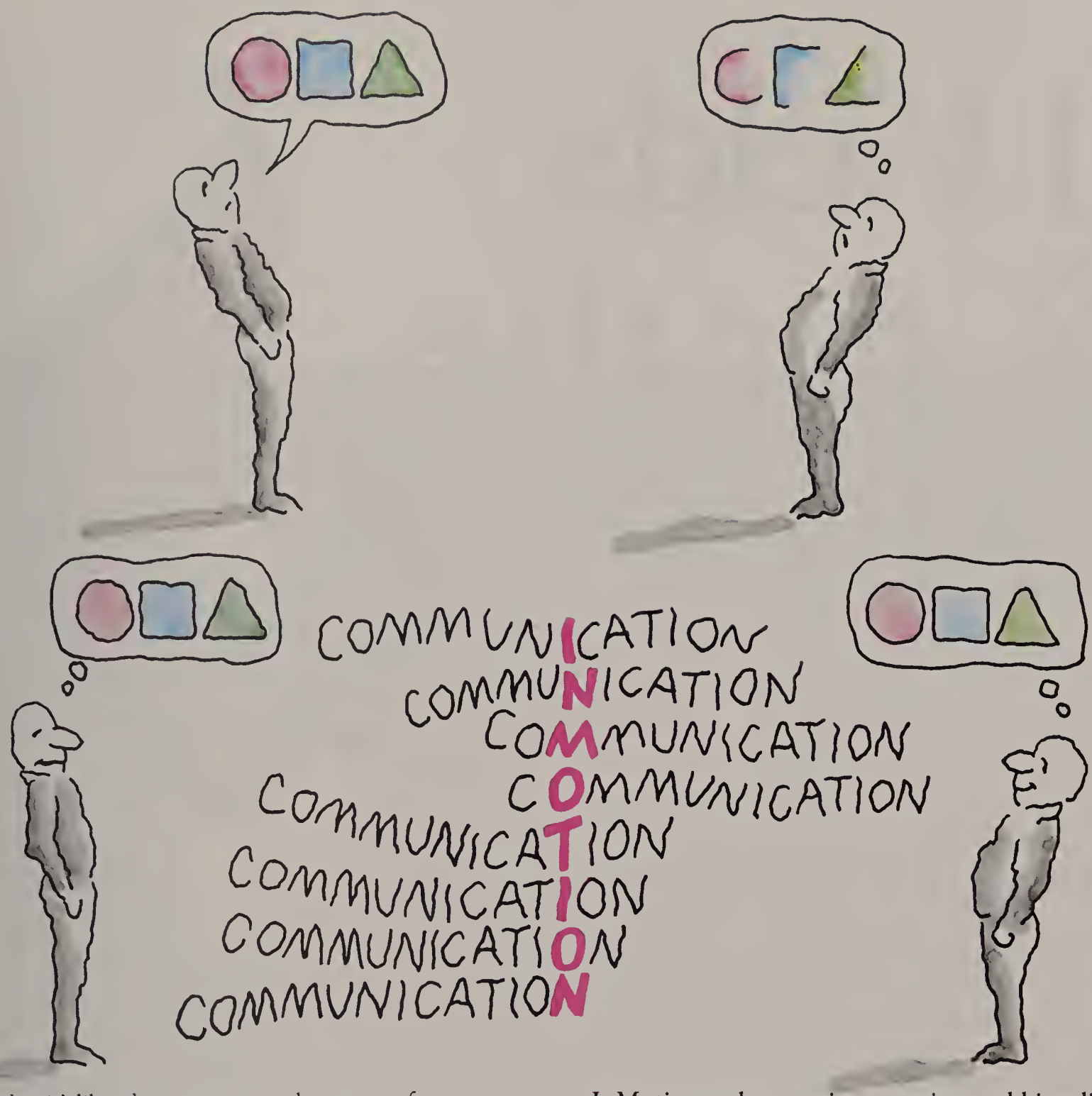
With electronic mail, you can send a message to 300 people as easily as to one person: you simply name a list of recipients instead of an individual. This feature dramatically cuts the time required to communicate up, down, and across the organizational ladder. Management hears about problems before they become bogged down in the red tape of multilevel communications.

### Corporate Cultural Revolution

Work habits are sure to change during Seafirst's acculturation to the Macintosh. As the computers become more widespread, workers find themselves less tied to their desks. They can go through their electronic mail at any available Mac. They can carry around reports and correspondence on a few disks in a shirt pocket instead of binders and folders in a briefcase and can review their work at another desk, in another building, or even at home. And as people become accustomed to the Mac, hardware upgrades and additional software will allow workers to extend the machine's functions to new facets of their jobs.

While Seafirst's skinny Macs and first-generation Mac software may seem modest to Macintosh mavens, installing a thousand or more machines where there were none before is a bold and innovative move in a staid corporate world where Macs often have to sneak in the back door. At Seafirst the Mac is recognized not only as a legitimate part of the automation effort but also as another tool available for the average employee. □

*Lon Poole is a Contributing Editor of* Macworld.

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# Oil Fields for the Mac

***Jeffrey S. Young***

*Roughnecks, roustabouts, and rock hounds. Wildcatters, well hands, and prospectors. When you think of the oil industry, you may think of colorful figures like these. You might not think of computers. But, of course, the oil business involves more than sinking a drill bit and striking a gusher. To successfully tap an oil field, a tremendous amount of data must be gathered during all phases of the process, from exploration to extraction.*

IBM and other high-tech heavyweights have established themselves in the oil industry, especially because of the industry's reliance on mainframe computers for sophisticated geological modeling and data storage. However, the Macintosh is gaining ground. Companies in many facets of the industry are discovering uses for the Macintosh. You might find a Mac on a manager's desk at a major oil company's corporate offices or in a trailer next to a Texas oil well.

**The Search for Oil**

Located not in a parched oil field in central Oklahoma but in a modern office complex in Sausalito, California, is Exploration Systems. This company has developed a hardware and software system for oil and natural gas discovery–coincidentally called the Finder–that uses a Macintosh as part of a multicomputer workstation. The Finder IV system combines a relational database with graphics software that displays maps of prospective well sites, showing, among other things, the makeup of underground layers of rock and production statistics for existing wells. Some 25 programmers, engineers, and *explorationists*–geologists and geophysicists who specialize in locating oil–are working on the project.

"As the number of technologies available for oil and gas exploration has increased, so have the quantities of data that an oil company must use and store," says the firm's president, Steve Darden. "The problem we're addressing with this system is data inundation. An oil company collects data on seismic conditions, soil and rock composition, oil production history, and so on for hundreds of thousands of wells. And since the explorationist works with the data in graphic form, rather than as numbers on a spreadsheet, an oil company needs to use a computer system with numerical data married to graphics."

Ideally, says Darden, an exploration team should be able to store all the information it needs, represent the data on detailed maps of a potential well site, and access the information by pointing and clicking. Changes made to the database should be reflected on

*Sitting on the dock of the bay, Steve Darden of Exploration Systems in Sausalito, California, has been doing more than watch the tide roll away. His firm develops computer systems used in the search for oil.*

*Sometimes looking for oil is like squeezing blood from a stone. ARCO senior research engineer Gary White is writing a MacFortran program, based on mainframe software, that helps decide whether to force oil out of rock using water pressure.*

*Dorothy Darden at an Exploration Systems workstation, which includes a Mac connected to a minicomputer, monochrome and color monitors, and a 3- by 4-foot digitizing table.*

## Oil Fields for the Mac

the corresponding map, and vice versa. For example, if a geotechnician enters information on a newly discovered fault line into the database, the map should immediately display the change. "That's what our Finder IV system can do," says Darden. "Our objective is to create a paperless exploration environment, and the Macintosh is crucial to our plan." The Finder system allows explorationists to piece together myriad fragments of information and create a three-dimensional visual model of both the above- and below-ground features of a prospective well site.

### A Computer Conglomerate

The core of Exploration's Finder IV system is a Prime super minicomputer, which stores the data—geological findings, land lease information, and so on. Connected to the Prime are color plotters, laser printers, and modems for access to remote oil industry databases and other company locations. Macintoshes used as intelligent terminals on individual desks and the Finder workstations themselves are also connected to the Prime. A sophisticated Raster Technology color graphics computer completes the core of the Finder IV system. Each Finder workstation consists of a Macintosh, a 14-inch black-and-white monitor, and a large color monitor. The Mac s display is routed to the large black-and-white screen because the operator sits too far away to easily see a normal Mac screen.

All the components of a full-fledged workstation are set into a modular plastic casing that is suspended over a 3- by 4-foot digitizing tablet. The operator moves a special mouse across the digitizing board to manipulate maps displayed on the color monitor. The workstation's color graphics computer lets the operator zoom in and out, rotate objects in three dimensions, build contours, and look for details, all with one hand. With the other hand the operator moves the Mac's mouse, pulling down menus to request information from the Prime computer without having to type anything at a keyboard. The Mac's mouse-controlled user interface provides easy access to the Prime's database and color graphics.

"We're taking a big leap of faith with the Macintosh," admits Darden, "because most of the oil patch is painted IBM blue. But it was critical for us that the tools be easy to use for geologists, geophysicists, and petroleum engineers. The Mac's user interface was what sold us."

Exploration Systems has been working on the Finder system for ten years. It started as an in-house program for the company's oil exploration arm, which is located in Oklahoma. "I was sure that the big companies would have already developed their own integrated exploration systems, but I found that wasn't the case," says Darden. "The major oil companies began investing in computer aids for exploration 20 years ago, so there is a lot of technically sound software, but

it is usually operated only by computer specialists. We chose to produce a system that is sort of like a Lotus *Jazz* for the explorationist. The Finder system can be tailored to any situation, using all the data sources found in the industry. Most of all, we wanted to put speed into the hands of the explorationists."

### Data Deadlines

Speedy compilation and analysis of data is crucial to oil explorationists. For example, a 30-day notice may be given for bids on an offshore lease. In that time the exploration team must analyze all the geological and geophysical data and decide whether to commit several million dollars to a lease and exploration program. "With our system a quick decision is possible," states Darden. "Using the usual method, in which numerical information is applied to hand-drawn maps, explorationists often end up making decisions by the seat of their pants because there simply isn't enough time."

While a complete Finder system starts at about $250,000, Darden believes the Finder will gain acceptance because it directly addresses the oil patch proverb, "A dry hole is the cost of imperfect information." Because a dry hole can cost several million dollars, Houston Natural Gas is convinced. They have ordered four systems with 17 Finder workstations, some of which have already been installed.

### Mud, Sweat, and Tears

If you haven't spent time at a well site, you probably don't know what a mud logger does. But mud loggers play an essential role in the production of oil, and Kendrick and Sons, a hydrocarbon well-logging firm based in Denison, Texas, has sent the Macintosh into the oil field to help them. Mud loggers do their work at the well site. As a drill bit sinks into the earth, a steady stream of mud is sent down the hole to lubricate the tip as it bites through the rock. The mud is pumped out of the hole, strained through a metal screen, and then pumped back in. When the mud passes through the sieve, chunks of rock remain behind. The mud logger retrieves the fragments, views them under a microscope, and identifies the makeup of the rocks. The resulting composition data, plotted on standard forms against the depth of the hole in feet, makes up the mud log. A typical log consists of a matrix of squares, each of which contains a pattern representing the type of material found at a particular depth. The log also includes a written explanation of drilling activity (see Figure 1).

Mud logging has traditionally been done by geologists working in trailers at remote oil well sites. Working in pairs to provide 24-hour coverage, the geologists prepared the logs on mechanical drafting tables called Leroys. The method had two major problems. "First of all, our guys are geologists, not artists," explains Smokey Stover, one of the firm's partners. "We lost a lot of time teaching them how to use the Leroys, and even after they'd learned, the drawings left a lot to be desired. They'd draw in ink on Mylar sheets, and in

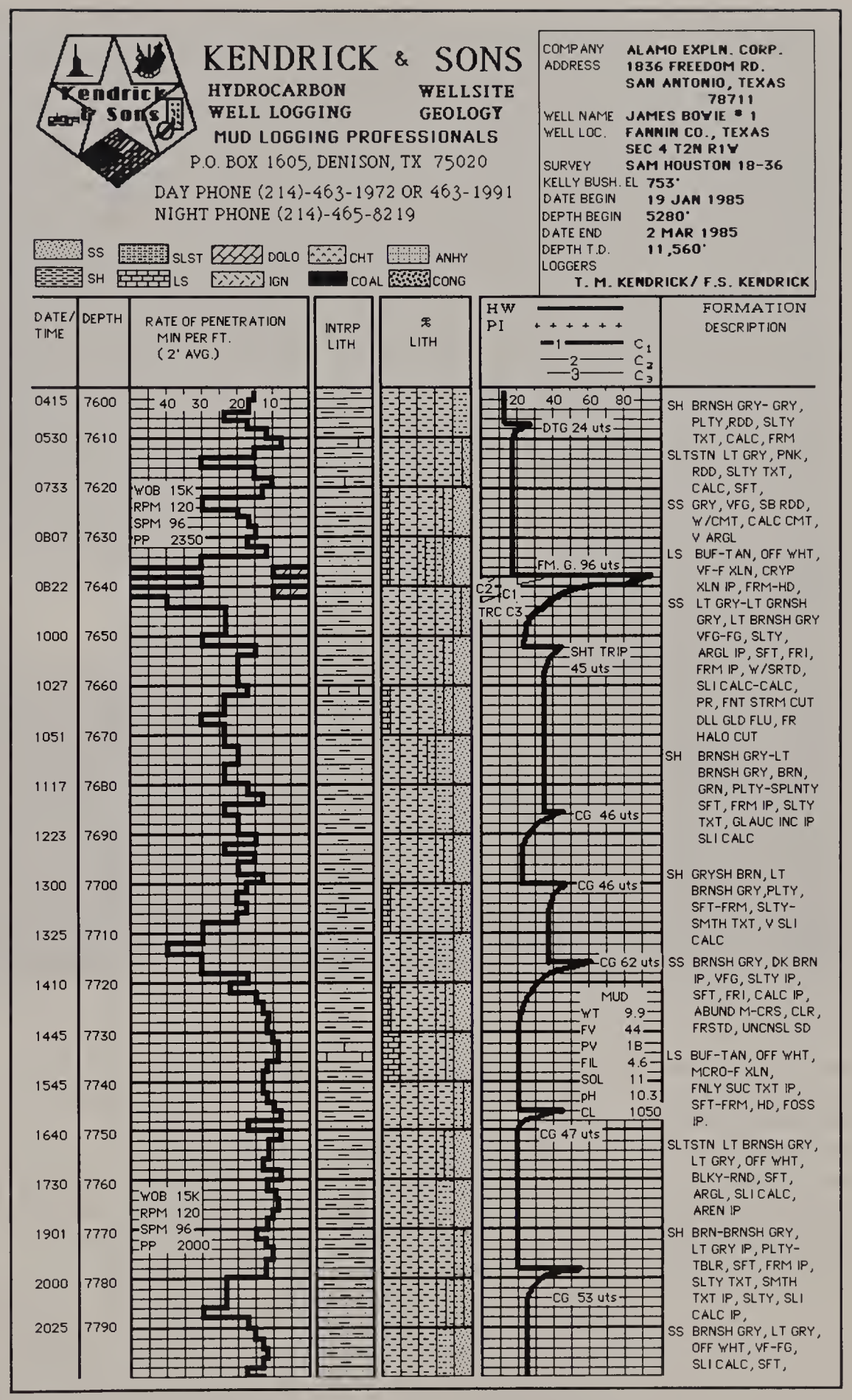


***Figure 1***
*This mud log, which was drawn in* MacPaint *by a geologist working in a trailer near an oil well, provides information on the composition of rock layers encountered by a drill bit.*

*Tom Kendrick (right) and his son Tommy are Texas mud loggers who have taken the Mac afield. Working at the well site, mud loggers analyze rock fragments strained from the mud used to lubricate the drill bit.*

the humidity out here it took a long time to dry. And then the well hands would come in all filthy and rub their hands over the ink lines and ruin a whole day's work."

But even more important was the issue of speed, says Stover. "Every day at the same time we'd close out the log for the 24-hour period. But the loggers would be drawing on the Leroys for a day or more, trying to catch up." Once they finished, the logs had to be mailed from the remote well sites to engineers at an oil company's home office. "You can bet they weren't too happy about having to wait a week or more to see what the rock looked like," says Stover. "Our first innovation was to put Telefax machines at the sites so the logs could be sent directly to the head office. But with our loggers using those Leroys, it still took several days."

**From Leroys to MacPaint**

Stover decided that there must be a way to do the job better and more quickly, with computers. He and his partner, Tom Kendrick, started talking to computer dealers in Dallas. They began with IBM. The salesperson recommended that they purchase a quarter-million-dollar mainframe. Another company suggested a $50,000 custom software application. Then Stover and Kendrick saw an Apple dealer's "test-drive a Mac" ad and went to take a look. The pair showed one of their mud log forms to the dealer, who duplicated it with *MacPaint* in half an hour.

After trying out the Macintosh, Stover and Kendrick decided it was what they wanted. They outfitted each of their five trailers with a 512K Mac, a second disk drive, an Imagewriter, and a modem, at a cost of about $4000 per set-up. They also installed a Macintosh XL in the firm's main office.

Now the mud loggers enter information into *MacPaint* documents. Lettering, which used to be hand-stenciled, is now taken care of by *MacPaint*'s text func-

tion. Filling out the forms, a process that formerly took days, is now completed within hours of closing out the log for each 24-hour period. The loggers send each day's log by modem to the home office in Denison. From there, the information is sent by Telefax to the well owners. Oil company engineers can look at mud logs within 24 hours of the time the loggers charted the strata.

**Bonus Reports**

What about all the time that's being saved at the well site? How are the loggers keeping busy? "We've been able to add a number of new reports for our clients," says Stover, "information that loggers weren't providing before. We call it drilling engineering data, and we're compiling it with *Microsoft File*." The data includes a "bit report" that records how long a drill bit lasted and a "mud report" with a detailed analysis of the information in the mud log. But most important of all, explains Stover, is the "show report," which is "the one you turn in when you find something valuable. When that happens, the client wants to know at what depth you were, how much oil you think is down there, and what it's going to take to get it out. That's the report the owner wants to see immediately, and with our Macintoshes and modems, we can get that information out much faster than before. Speed is the name of the game in the oil business, and what we're offering is more information faster. You can't do better than that."

**Approved by ARCO**

It isn't just companies on the periphery of the oil industry that are using the Macintosh. For example, the Mac is on the list of "approved" personal computers for the engineering and geological staff at Atlantic Richfield Company (ARCO). At ARCO's Exploration and Research Center in Plano, Texas, some 50 Macs and a number of LaserWriters are scattered throughout the buildings. While some of the equipment is linked in AppleTalk networks, primarily in the administrative sections of the company, most of the Macs are used as individual machines by researchers and geologists or as smart terminals for access to the company's mainframes and supercomputers.

According to senior research engineer Gary White, "Quite a few of us are using *MacDraw,* primarily to do lab equipment layouts and flow diagrams. For example, we draw piping layouts for lab experiments to analyze the quality and makeup of oil coming out of various wells." White says that in addition to *MacDraw,* his group uses *Multiplan* to keep track of lab data and *Microsoft Chart* to display the results.

**Scaled-Down Simulation**

"The particular project I'm involved in," says White, "is bringing a mainframe FORTRAN program over to the Macintosh. The program, which simulates underground oil and water flow, was written for a mainframe, but I'm using almost exactly the same programming to make it work under MacFortran. Of course, the Mac version can't solve problems as large as those we can do on a Cray supercomputer, but the Mac program is ideal for small problems that can be solved at someone's desk. It's also a good training device for engineers who want to use the mainframe version eventually. Using the Mac is a lot less intimidating than running a problem on the supercomputer."

*Exploration Systems took a leap of faith with the Mac's user interface. Most of the oil patch is painted IBM blue.*

The underground flow simulation enables petroleum engineers to manipulate various elements of a reservoir of oil. Oil is rarely found in open pools under the earth; it is almost always found in spaces within a stratum of rock. If the pressure released by drilling a single well is insufficient to bring oil spewing out of the ground, the oil company drills a second hole and pumps water in to build up pressure and force the oil out. As a field is played out, various enhancement techniques can be attempted to extract the oil that's left. "We're particularly interested in enhancement processes," White continues. "The most widely used process employs carbon dioxide, which effectively dry-cleans the rock, forcing out the remaining oil. However, since few substances are as cheap as water, these processes can get expensive very quickly. So we try to use our reservoir flow models to predict how a field will react to various enhancement processes and to determine how long to flood the field with water before trying another technique."

*Tommy Kendrick (left) and his father Tom use Macs to prepare reports for oil company engineers. Kendrick & Sons provides special reports when an oil strike seems imminent.*

*Smokey Stover is Tom Kendrick's partner in their mud-logging firm. Explaining the advantage of using* MacPaint *to prepare mud logs, he says, "Our guys are geologists, not artists."*

Since a substantial number of oil fields in the United States are on the decline now, enhancement processes have become a major area of research for most oil companies. "Running the flow simulation on the Macintosh, with its terrific graphics, means more engineers can do reservoir modeling on a day-to-day basis," says White. "Certainly it's like doing back-of-the-envelope calculations when you compare the Mac to the supercomputers, but the Mac is easier to use for most engineers and geologists."

**Project Management and Charts**

While the Macintosh is popular among the scientific research staff, it's also finding a place in two other areas of ARCO. Glen Arceneaux, a personal computer consultant in the company's End-User Computing Group, which provides training and product information for ARCO employees who use computers, sees employees making good use of the Mac in project management. For instance, members of the Exploration Computing Services Group, which develops mainframe software applications, use *MacProject* to schedule and manage their software projects.

ARCO's strategic planning units have also found Macintosh and Lisa technology indispensable. The groups perform in-depth studies of various areas of corporate planning—cost of data retrieval, for instance, or new oil field technology. The studies entail gathering huge amounts of data, producing hundreds of charts to display the data, and compiling a series of recommendations. "We did two of these studies last year," states Arceneaux. "The first was on a mainframe, and the second was on a Lisa. There was no comparison. The Lisa could do the kinds of specific, one-time charts that we needed so well, so quickly, and so easily that we'll never go back to the mainframes for them. The nature of the studies was such that many of the charts had to be drawn by hand; *LisaDraw* proved indispensable for that."

*For mud loggers, speed is the name of the game. With Macs and modems, the loggers offer more information sooner than before.*

**Mac Meets Manager**

The Macintosh is also making inroads to one of the last noncomputerized bastions of the company: middle and upper management. "It's funny, but you'd be amazed at how many managers didn't want to put IBM PCs on their desks," laughs Arceneaux. "Sure, a computer was OK for a secretary, but the managers saw no use for it themselves. That attitude still prevails at the executive level, but we're finding that more and more middle managers are requesting Macs for presentation graphics and spreadsheet applications. Macintosh programs are easy enough to learn that there's not the same kind of resistance we used to find to the PC." Another factor Arceneaux cites is what he calls the relearning curve. "Most managers use a given program only once every week or two. Now, how long does it take you to relearn Lotus *1-2-3* after a few weeks away from it? Macintosh programs are a lot more intuitive, and you rarely have to crack a manual. The Macintosh is definitely finding its niche in this corporation." □

*Jeffrey S. Young is a Contributing Editor of* Macworld.

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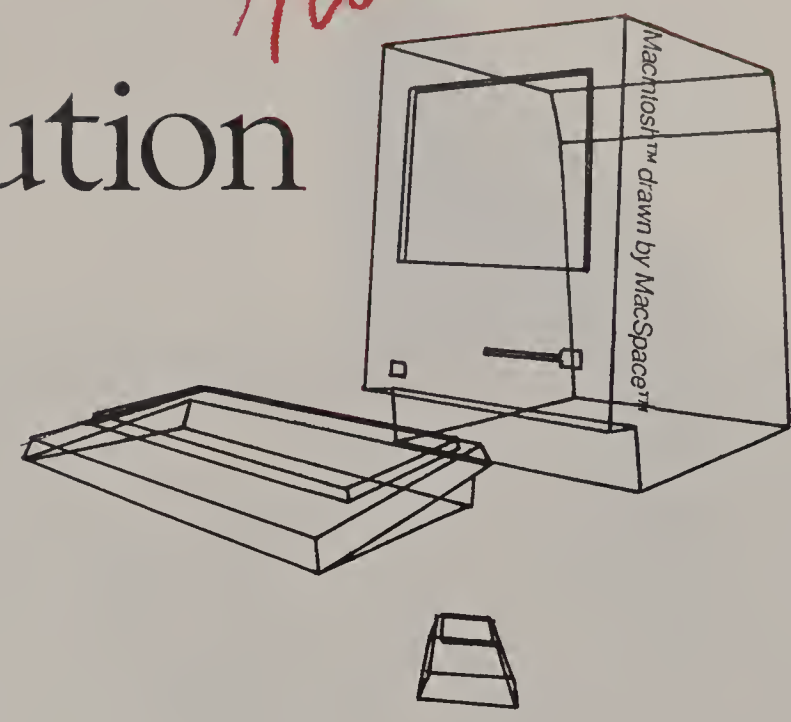


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# Art for Articles' Sake

**Craig Webb**

*The stories you read in this morning's paper were most likely written on a word processor, formatted and set on a computerized phototypesetter, and transmitted to press via satellite. In contrast, many of the illustrations accompanying those stories were created with pens, straightedges, and scraps of type stuck in place with beeswax. Until quite recently, this discrepancy in technology seemed unavoidable. The high cost of computerized graphics systems made it impossible for most newspapers to produce computer-generated artwork. Then the Macintosh was introduced.*

On May 1, 1985, a small map showing the location of Bonn, West Germany, appeared in *USA Today,* the country's third-largest newspaper. Although the map looked no different than the other location maps sprinkled throughout the paper, this map was different: it was produced on a Macintosh.

Graphics occupy a good portion of *USA Today*'s pages, giving the newspaper its distinctive look. Since the newspaper's debut in September 1982, the illustrations have been drawn by hand by a staff of over a dozen artists at the paper's Washington, D.C., office. Richard Curtis, managing editor for graphics and photography, began investigating the possibility of computer-generated art. He found that the paper's Atex word processing system could produce simple bar charts, such as those used to depict stock market trends. This was a limited application, however, so Curtis looked into computerized graphics systems.

*More than a year ago, Richard Curtis, a managing editor at* USA Today, *ordered two 128K Macs and an Imagewriter to test the system as a sketchpad for the paper's art department.*

USA Today *staff artist Marcy Eckroth Mullins prefers drawing with a stylus on the MacTablet, as she did to create the first Macintosh graphic to appear in the paper. The art department's graphics tool chest now includes four 512K Macs, an Imagewriter, a LaserWriter, and an array of software.*

Since a typical system that included software, hardware, and a database of graphics images cost $97,000, he decided to give the Macintosh a try.

**Electronic Sketchpad**

"We bought two 128K Macs and an Imagewriter as an experimental system in the summer of 1984," says Curtis. "We thought it would be a relatively inexpensive way to introduce the artists here to computer graphics. It started out as an electronic sketchpad, but it's developed into more than that."

Curtis found that Imagewriter printouts were too crude for *USA Today*'s standards but felt that LaserWriter output would suffice, particularly if an image were created extra large and then reduced to the size desired. Today the art department has four 512K Macintoshes, an Imagewriter, a LaserWriter, and a shelf full of software, including *MacDraw, MacDraft, Microsoft Chart,* three of Hayden's *Da Vinci* series of drawings, *MacProject,* Telos's *Filevision,* and Haba Systems' *Quartet.* Curtis also purchased Summagraphics' MacTablet, which provides a flat drawing surface and a stylus that can be used in place of the Mac's mouse. Staff artist Marcy Eckroth Mullins used the MacTablet and *MacDraw* to draw *USA Today*'s first Mac-created map.

**A Map Is Born**

"I prefer MacTablet's stylus to the mouse," says Mullins. "It's easier to relate the position of the stylus to a position on the screen, since the stylus is so much smaller than the mouse." For the map showing Bonn's location in Europe and in the world, Mullins placed a photograph of a globe on the tablet and produced a 4-

*(continues on page 68)*

USA Today *beams its contents via satellite to printing plants around the coutry so the daily can hit the newsstands early in the morning. Now the technology in the paper's art department matches in sophistication.*

# All the News That's Fit to Print Out

*USA Today,* which has a circulation of 1.3 million and a staff of more than a dozen artists, can probably afford to take a chance and buy a few Macintoshes and a LaserWriter. But in addition to this major newspaper, scores of smaller publications across the country are finding that the Mac-LaserWriter combination is a cost-effective alternative to traditional publishing methods for both text and graphics.

**New Publishing Standards**

The *Todd County Standard,* a weekly newspaper in Elkton, Kentucky, with a circulation of 2450, uses two 512K Macintoshes, two Imagewriters, and a LaserWriter to produce stories, headlines, and advertisements. Mark Howell and Mike Finch, the *Standard*'s co-owners, also use the Macintosh to keep the paper's books and to print mailing labels. Howell and Finch use Manhattan Graphics' *ReadySetGo* page-makeup software to produce headlines and columns of text, which they print on the LaserWriter and paste up onto pages to prepare for offset printing. Howell figures that the cost of the Macs and the printers was about $18,000, which may seem like a hefty price for a small newspaper. But he claims that comparable systems would cost two to three times as much.

**Acceptable Output**

The *Rogue River Press* in Rogue River, Oregon, is also produced on the LaserWriter. Editor and publisher Peter Morales prints columns of text and headlines with *Microsoft Word* for the 5500-circulation weekly. These "galleys" are then pasted up in pages, and a printing plate is made. On the rough surface of newsprint, LaserWriter output is nearly indistinguishable from typeset text. Morales also uses *Microsoft Chart* to produce graphs for publication, *Multiplan* to keep track of advertisers and accounts, and *File* to store a list of subscribers. Morales's only complaint about *Word* is that it doesn't allow him to vary the leading—the amount of space between lines—to the degree that a phototypesetter would. However, Morales is generally pleased with the Macintosh alternative to typesetting. "The ability to reset stories in a different column width or type size is one of the beauties of the Mac-LaserWriter combination. On our old equipment, that meant retyping the whole thing. I think the LaserWriter represents a breakthrough for small newspapers."

**The Typesetting Link**

While some newspapers are using the LaserWriter in place of phototypesetters, others are using the Macintosh in conjunction with typesetting equipment. The *Daily Utah Chronicle,* the campus newspaper at the University of Utah in Salt Lake City, has 15 Macs and two Macintosh XL workstations. According to general manager Robert McOmber, reporters use the Macs to write stories, editors use them to check spelling and edit copy, and account executives use them to track advertisements that appear in the paper. In addition, one of the Macs is linked to a Varityper typesetter by means of a G.O. Graphics interface. Reporters turn in their stories on *MacWrite* or *Microsoft Word* disks. Files are then transferred to the Varityper system's 8-inch disks with a custom program. "Connecting the Mac to the Varityper has streamlined operations," says McOmber. "We save a lot of time because we don't have to rekey text at the Varityper's terminal." The *Chronicle* plans to upgrade several of the Macs to 512K, connect them in an AppleTalk network, and purchase a LaserWriter to produce graphics.

Those are only a few examples of small newspapers that make use of the Macintosh. With affordable page-makeup software such as Boston Software's *MacPublisher,* Manhattan Graphics' *ReadySetGo,* and Aldus Corporation's *PageMaker,* an increasing number of small presses will be composing text, headlines, and graphics in columns on the Mac's screen. A number of companies are developing interfaces to typesetting equipment that will allow Macs to be used as typesetting terminals. And for aspiring publishers who can't afford a laser printer, many copy shops are installing Macs and LaserWriters for their customers' use. At $1 to $2 a page, professional-quality printing is now within every Macintosh owner's reach.

*(continued from page 66)*

inch circle with *MacDraw*'s circle tool. She then used the stylus to trace details of the globe, including outlines of continents and longitude and latitude lines. She used *MacDraw* features such as flip and copy to save herself the effort of redrawing longitudinal arcs. "It's a different process than the old system," Mullins explains. "I can cut, paste, move sections, and generally experiment with the way a drawing looks in a way I never could with pen and ink."

After she finished drawing the globe, Mullins traced a portion of a map of Europe from an atlas. She put a box around the map and then pasted the globe in the top left corner. *MacDraw* allowed her to move the globe several times until it looked right. Finally, she typed the names of several countries and positioned them on the map.

**Camera-Ready Art**

Mullins printed the map on the LaserWriter at 50 percent of its original size, exactly the width needed to fit into one *USA Today* column. The map rolled off the printer as camera-ready art, ready to be pasted up. Well, almost ready. Graphics editor Jeffrey Albert suggested that Mullins remove some of the lettering to make the map appear less cluttered. She made the corrections on disk and printed out the final result (see Figure 1). She used preprinted acetate sheets to add shading and a pattern representing water, and the drawing was finished.

Although it took Mullins several hours to complete the drawing–longer than it would have taken her with traditional drawing tools–she was able to save the file as a template for future maps, thus saving time in the long run as a library of "clip art" accumulates. Curtis expects the staff to produce Macintosh-generated drawings more quickly as they become more proficient with the software. He anticipates that each artist will soon be able to produce as many as 12 such maps per day, as well as charts, graphs, and miscellaneous illustrations (see Figure 2).

**A Speedier System**

"In the past we had to use a special camera to make copies of drawings for printing," says Curtis. "That usually took 20 minutes to an hour to process. The LaserWriter has already paid for itself because of the amount of time we save by using LaserWriter printouts as final artwork. Revisions can also be made more quickly when the artwork is on disk."

Curtis expects that the Macintosh will give his staff more time to dream up better versions of the 20 to 30 graphics they turn out daily. That time savings would be just as valuable at a smaller publication, as would another factor: the price of a Mac and a LaserWriter compared to other computer graphics systems. "For small newspapers it's a godsend," he says. □

*Craig Webb is an editor on the foreign desk of United Press International in Washington, D.C.*

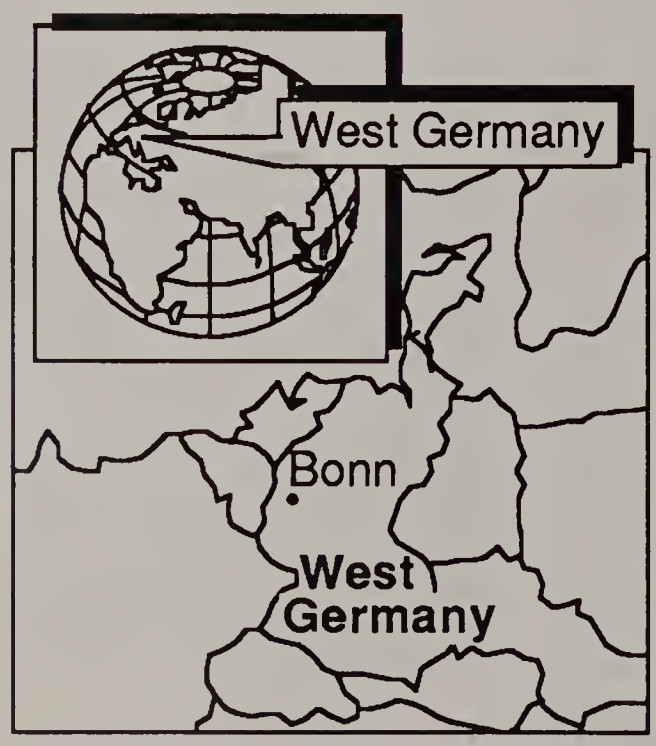


***Figure 1***
*This map, showing the location of Bonn, West Germany, was the first Macintosh-generated graphic printed in* USA Today. *The globe was added to the newspaper's growing library of graphic images.*

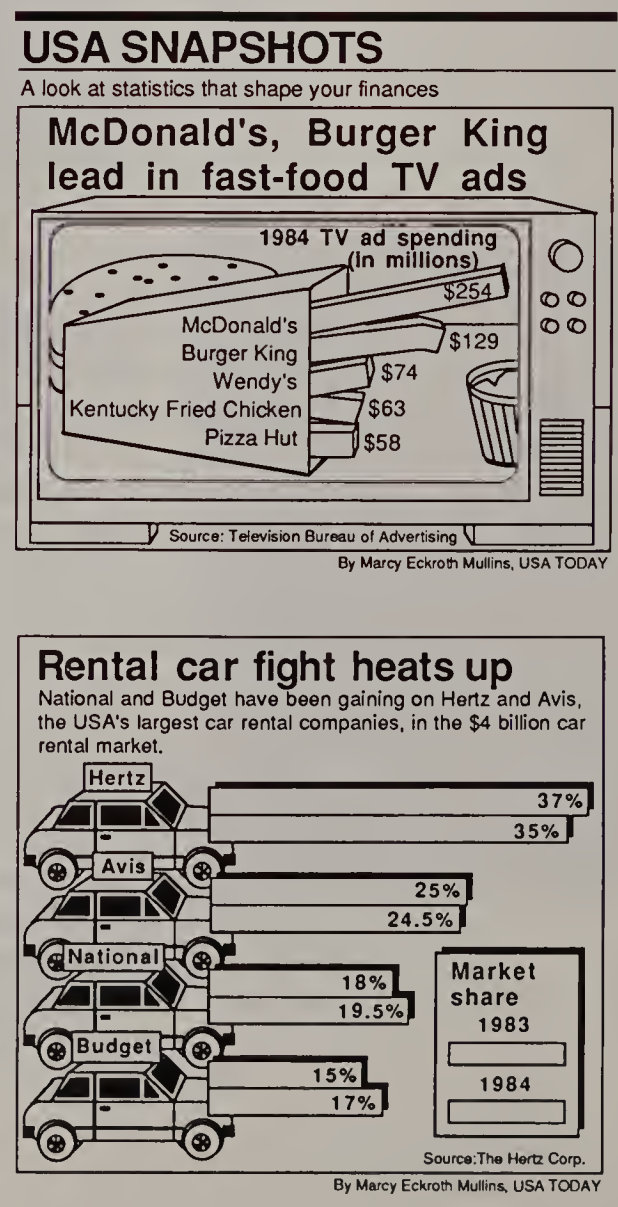


***Figure 2***
*Macintosh-produced illustrations have appeared in* USA Today *since May of 1985. The charts shown here were drawn with* MacPaint *or* MacDraw *and then printed on the LaserWriter, ready to be pasted up.*

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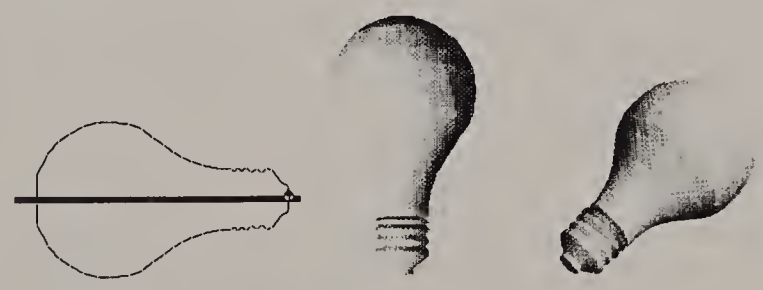

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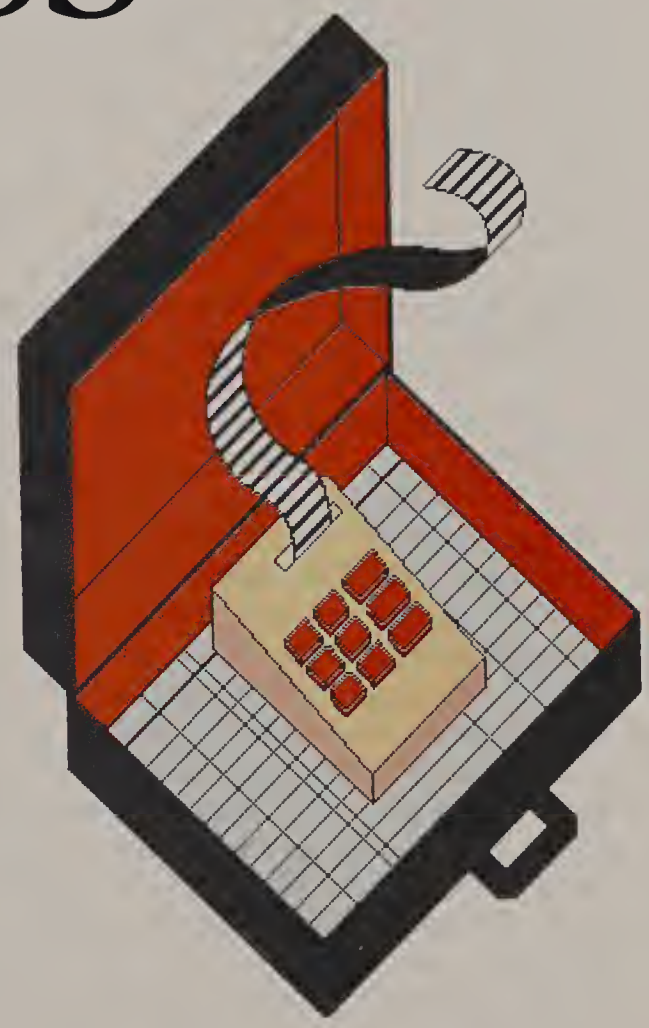
*Chris Veal expects to make Arthur Young's auditing more efficient with the Macintosh and hopes to save some trees in the process.*

# The Paperless Audit



***Jeremy Joan Hewes***

*Since the first click of the mouse, the Macintosh has appealed to the visually oriented and the artistically inclined. Yet the Mac is developing a following among people who specialize in numbers. When its San Jose, California, office started using Macs in the audit process, Arthur Young & Company became the second of the Big Eight accounting firms to do so. According to an Arthur Young partner, the Mac helps overcome the computerphobia, inconvenience, and high cost that have traditionally been obstacles to computerized auditing.*

In the audit department of Arthur Young & Company's San Jose office, 110 people share 62 Macintosh computers, seven Sunol hard disks, seven Macintosh XLs, five LaserWriters, and a small AppleTalk network using a hard disk and software from Sunol Systems. The audit staff members and their computer equipment are key elements in an ambitious program. Its goal: the paperless audit. Achieving the goal involves using the Mac in as many stages of the audit process as possible. In the field as well as in the office, Arthur Young auditors use Macs and hard disks in AppleTalk networks. Peat, Marwick, Mitchell & Co., the first Big Eight accounting firm to adopt the Mac officially, uses the machine primarily for field audits (see "Mac on the Audit Trail," *Macworld,* February 1985).

Chris Veal, the partner in charge of computer resources in Arthur Young's San Jose office, decided to use the Mac in the company's audit department. A specialist in computers for Arthur Young since 1974, he believes the firm is in the vanguard of an electronic revolution in auditing. "If you saw the amount of paper that's cranked out in an audit, it would amaze you," Veal notes. "So we're trying, a little bit at a time, to work our way toward a paperless audit."

**Well, Not Quite Paperless**

In fact, Arthur Young will always supply clients with certain papers at the completion of an audit; the financial statement and management letter are obligatory documents in the process. But the convoluted process that traditionally has created those documents seems Byzantine at best. Veal states, "Before we computerized, the auditors wrote notes and comments by hand, and managers and partners reviewed them before they were typed. One of the big intangibles was how much time managers wasted wading through bad penmanship."

The Macintosh method is certain to save both time and money, Veal points out. "Now that we've equipped the audit teams with Macs, we will have

everyone develop their management letters, financial statements, and notes on the Mac, then print their own drafts. The draft and a disk will go around to various approval points, from the audit senior to the manager to the partner to a technical reviewer. And those people will make their changes to a document directly, on the disk."

Only after the words and numbers have been approved at all levels is the audit data produced by the firm's report department, which used to produce a new draft after entering each reviewer's handwritten comments. So that its equipment and files are compatible with the Macintosh files generated by audit teams, the report department recently converted from dedicated word processors to Macintosh XLs, which are linked to two LaserWriters.

In a sense, Veal reports, the LaserWriter is responsible for the success of the Macintosh among the audit staff at Arthur Young. "The LaserWriter got people interested because they saw that they could create charts and graphs and make the reports look great."

**Easy Access to Macs**

Although not every staff member has a Macintosh, the computers are generally available to anyone who needs them. Some 35 auditors, who comprise the third-, fourth-, and fifth-year staff of the department, have been given complete systems: a 512K Mac, a second disk drive, a printer, and a carrying case.

The managers and the first- and second-year staff have two avenues of access to Macs. One is a pool of ten machines that may be checked out to use in or out of the office. The other is the department's Personal Computing Center, where five Macs are linked via AppleTalk to a LaserWriter and a 25-megabyte Sunol Systems hard disk. This small-scale Macintosh network is linked to the tax department's network of IBM PC-compatible Eagle computers on another floor. Although the Eagles are linked in a Datapoint Arcnet system that is not directly compatible with AppleTalk, Sunol's software provides a mechanism for transferring files back and forth between the two groups of computers.

Extensive use of AppleTalk must wait until a greater variety of hardware and software is available for the network. Veal explains that at present, because no multiuser versions of application programs are available for the Macintosh, the Sunol hard disks must be divided into separate volumes, one per attached computer. Each volume contains copies of the programs used by its corresponding Mac. "The primary use we have for the Sunols is sharing application programs," he says.

All five Macs in the Personal Computing Center are in use most of the time, and the combination of computer novices and the hard disk's shared resources has led to some problems and precautions. "We typically do not use the hard disk for any kind of data storage," Veal observes. "We warn everybody to make sure to copy their data on a floppy disk, because who knows when a file might get wiped out on the hard disk."

**Special Software**

Because an Arthur Young audit combines conventional computer applications, such as word processing and mathematical calculations, with specialized operations, auditors use both commercial programs and custom software. Two key Macintosh programs have been developed at Arthur Young. An audit support program was prepared by the staff of the firm's national office in New York. Because the program is too large to be used on floppy disks, it is stored on the six Sunol 16-megabyte hard disks that travel with audit teams to clients' offices.

Chris Veal developed a second custom program that calculates amortization for leases and loans. Veal explains, "The high-tech industries we serve handle a

*Susi Damilano uses one of the Macs networked through Sunol Systems software in the audit department. Each network includes a hard disk, which is partitioned into volumes.*

*Audit department staffers Julie Davis (left) and Anne Salazar use a traveling Mac system for a field audit. An audit team's field equipment sometimes includes a 16-megabyte hard disk, though not in this case.*

lot of leases, and in certain circumstances you have to capitalize the leases rather than write them off as business expenses. There wasn't any Mac software to help make that decision, so we wrote the program in Pascal on the Lisa, and it's now running on the Mac in our office. We're sending the final version to our national office, where people will give it an Arthur Young look and then distribute it."

Another custom program is being developed by the Arthur Young national office to achieve file compatibility among the approximately 2000 personal computers used in the company nationwide. Veal calls the program "bridging software," because it converts files from one format to another. Spreadsheet data in *1-2-3* on the IBM PC, for example, can be transferred with the program to *Multiplan* on the Mac.

Of course the San Jose audit personnel also use commercial programs. At present the audit teams use primarily *MacWrite* to enter their notes and memos and to draft the management letter and financial statement. They are also being trained to use *Microsoft Word. MacPaint, MacDraw,* and *Microsoft Chart* are used for illustrations, charts, and graphs, and *MacProject* for planning. *Multiplan* is currently the spreadsheet of choice in the San Jose office, but Veal expects that both Microsoft's *Excel* and Lotus's *Jazz* will be widely adopted as well.

**Expanded Networks**

The AppleTalk network in the Personal Computer Center and the more modest sharing of hard disk resources in the field are precursors of an expanded role for networking in the San Jose office of Arthur Young. Chris Veal says that he'd like to see Arcnet developed for the Macintosh because the firm already uses the network for its PC-compatible machines. As of this writing, Nestar Systems has not announced plans to develop a Macintosh version of Arcnet.

For now, Veal is content with AppleTalk's capabilities. "It works," he states. "It allows us to share the resources, and using the hard disk is about three times as fast as using floppies. Plus you don't have to carry all the programs around with you."

Yet there are compromises in this networking scheme, and Veal is well aware of them. For example, Apple states that up to 32 Macs or other devices can be linked in a single AppleTalk network. That number may be practical if those machines are primarily using a LaserWriter, he notes. Because the Mac sends a greatly compressed data stream to the LaserWriter, AppleTalk's relatively slow 230 kilobits-per-second transmission does not hinder performance greatly.

By contrast, operation is clearly affected even when only five Macs are accessing the hard disk at the same time, Veal says. "When you start doing what we're doing with the Sunol–shipping full data back and forth–it can get real slow." Consequently, he plans to limit the size of any single work group to a dozen units.

What Veal foresees for the audit department, ultimately, is a series of Macintosh work groups that are linked by cable and software. "They can operate independently or talk back and forth with each other. AppleTalk is cheap–$50 per connector–and easy to set up. As long as you define a work group as, say, 5 or 10 people–12 tops–AppleTalk works just perfectly. In that context it can't be beat."

**Why the Mac?**

The low cost of simple networks is one reason that Chris Veal chose the Macintosh for auditing at Arthur Young. But he had other good reasons, not the least of which is that he feels the Mac has become a viable business computer. "As the commercial developers provide more and more software, businesses will acquire more Macs," he says. "We're at the point now where there is enough serious software for business."

Perhaps more important, Veal points out, the Mac overcomes the major barriers to introducing computers in an organization. "There are three levels at which people address computers. The first level is whether they have the aptitude for computers," Veal says. "The Mac makes aptitude almost a dead issue.

"The second level is convenience. The minute you say that people have to wait in line or walk down the hall or go to another building to use a machine, they won't use it." Because the Mac is portable, it can be used conveniently by many people, in many locations.

Veal states that the third level is cost, which has traditionally been a deterrent to computerization. But the Mac and the AppleTalk connectors have made networking affordable. "The Macintosh is cheap enough that we can supply more of them," Veal observes. "In nine months everybody in the audit department should have one."

Clearly the Mac's future at Arthur Young in San Jose promises to be a dynamic one. In part, the dynamism results from the rapidly advancing technology that built the Mac and from the computer's ease of use, convenience, and cost. But something less tangible is also at work. As Chris Veal puts it, "We're still experimenting. It's like skiing. Several skiers are coming down the mountain; some of them are moving very fast and are obviously out of control, and others are moving very fast but are still under control. So far, I think we're like the second group." □

*Jeremy Joan Hewes is a Contributing Editor of* Macworld.

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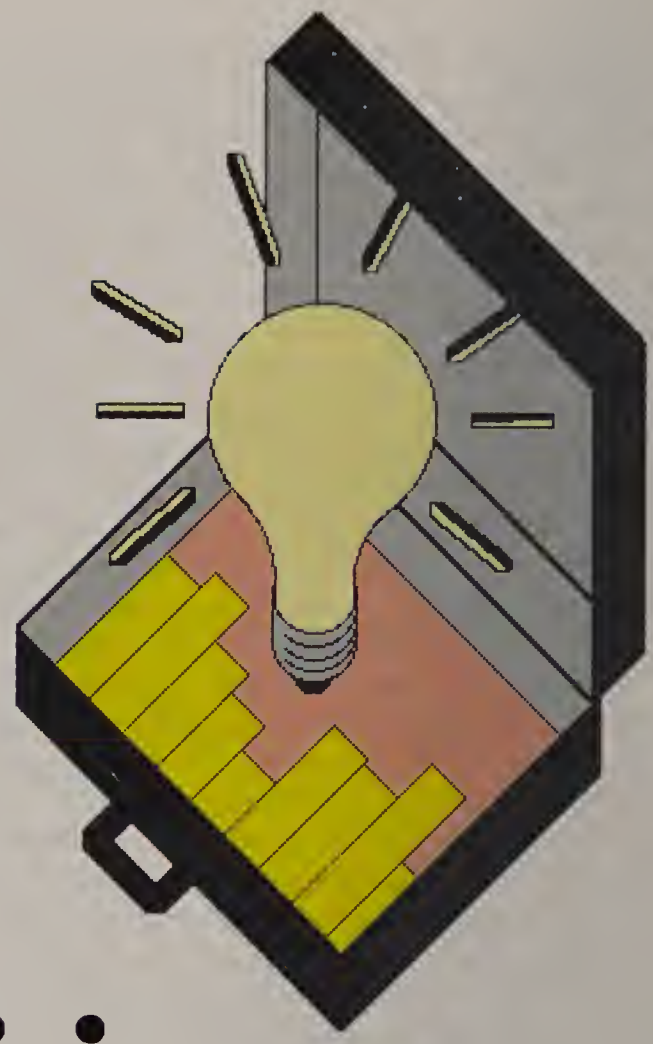


***Janey Hiller***

*How the media are used in the promotion of a particular product is a complex matter that requires careful planning based on volume upon volume of statistics. Whether you see a specific ad in* Mother Jones *magazine and not in* National Geographic *or view a particular commercial during a televised basketball game and not during today's installment of "All My Children" is decided by advertisers who think of you as a cipher in the demographics of age, sex, education, income, and type of consumer. While your purchasing decisions are too complex to be affected much by one advertising agency, that doesn't keep the industry from trying. One of the country's largest ad agencies gets help in the attempt from the Macintosh.*

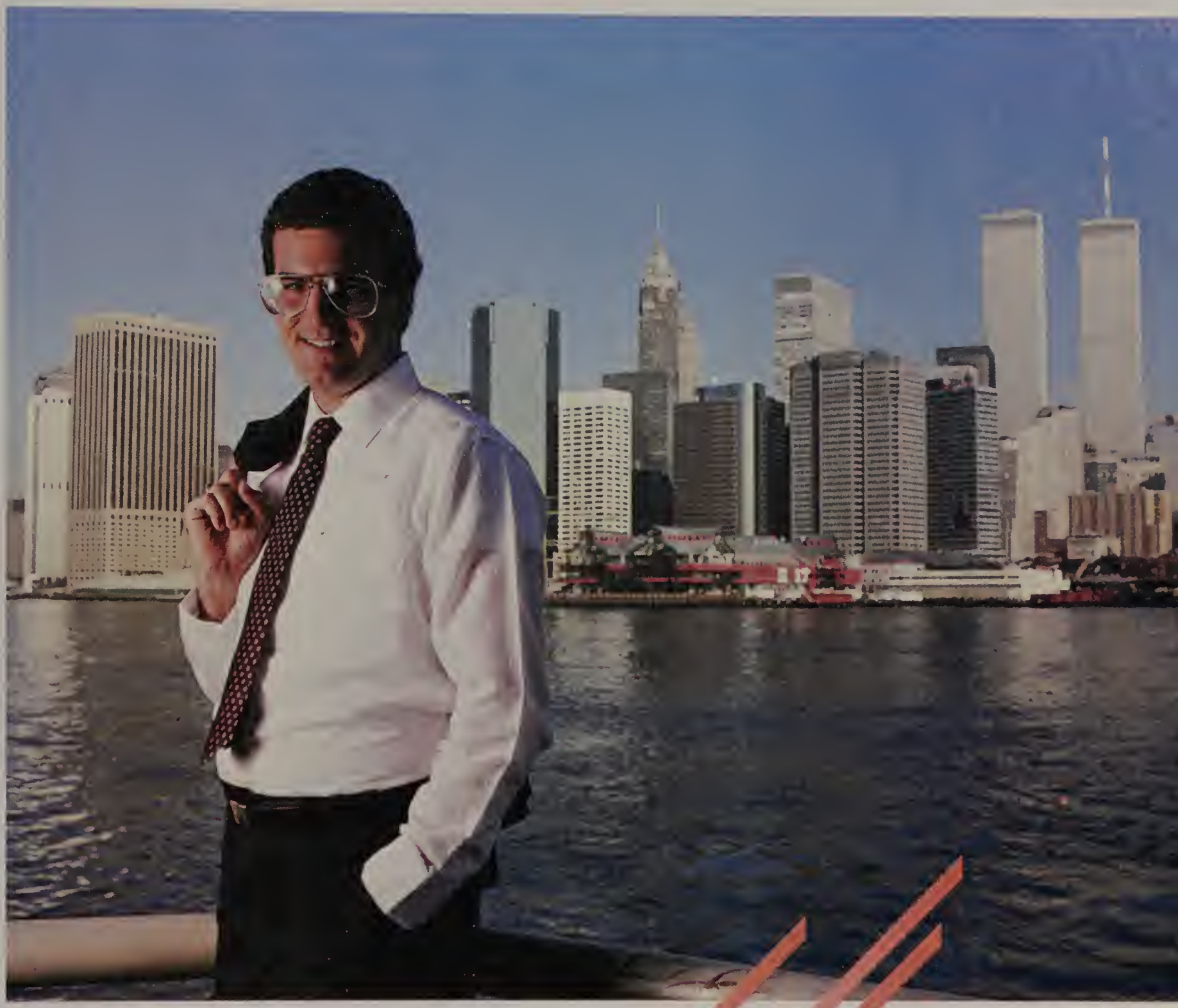
A fundamental indicator of the business community's acceptance of the Macintosh is the number of businesses developing their own programs to run on the Mac. If most in-house business programming remains under the roof of MS-DOS, then the Mac isn't making much of an impact. Programmers have to create proprietary software for widespread corporate use on the Macintosh before the Mac is truly accepted in large companies.

Such software already exists at Foote, Cone & Belding (FCB), one of the country's largest advertising agencies. *Adeffect,* a proprietary program, was written by an FCB vice president. The program helps generate national media plans for the agency's accounts. FCB also demonstrates that a variety of personal computers can coexist in a national corporation. Aside from the Mac, the agency uses Lanier, Data General, and Epson products.

**The Two Faces of Ads**

FCB employees use the Macintosh to write ad copy, design layouts, and develop storyboards. The agency's Los Angeles office was a Macintosh test site and has 55 Macs linked in several networks that include LaserWriter printers. A wide range of employees, from account executives to junior mail clerks, have Macs, and by all accounts the experiment has been a great success.

*Adeffect,* however, was written in a skyscraper in Manhattan and reflects a serious, strictly business approach to advertising. The program performs one of



*Things are looking bright for FCB's media planners, thanks to a program written by Daryl Scott, vice president for corporate media and operations research, that helps anticipate an ad campaign's effectiveness.*

the major number-crunching functions of the advertising industry–media planning–and does it with Macintosh elegance and simplicity. While you might think of advertising in terms of dancing soft drink bottles or singing cats, the meat and potatoes of the industry is media planning.

**Planning a Campaign**

Depending on the product being advertised, the media campaign an agency runs can be as simple as an ad insertion in one special-interest magazine or as multifaceted as synchronized exposure in newspapers, magazines, radio and television shows, outdoor advertising, and direct mail. Evaluating the results of a campaign is simple enough in its wake. The campaign is successful if sales go up. It is more difficult to predict what particular mix of ads will most effectively reach target consumers. A client pays the ad agency to make such predictions, and successful media campaigns go a long way toward ensuring many years of multimillion-dollar contracts between an agency and a client.

Obviously, an agency will not run dishwashing detergent ads in *Field and Stream,* but it may have to choose between *Good Housekeeping* and *Family Circle.* If the advertised product is a new fishing reel, the agency might have to decide whether the lower cost and specific readership of *Field and Stream* make up for the higher cost and much larger readership of *Sports Illustrated,* whose readers certainly include many people who like to fish. Media planners decide in which magazine the ad is more likely to be noticed and more likely to influence potential buyers.

Media planning is based on numbers. While intuition and experience still play a large part in decision making, today's multimillion-dollar campaigns are planned according to statistics and statistics based on statistics. Media planners consult large databases stored in mainframes that are shared by the advertising industry. The databases contain statistical tables and information compiled over years of market research and advertising effectiveness testing, including results of media campaigns in various markets. The databases track obvious demographic criteria–age, sex, income, education–for each advertising medium available.

Large national agencies compile their own tables and information that complement the shared databases. FCB, for example, develops its media plans around proprietary statistical tables containing response curves, which track consumer response to advertising in various media over time. The response curves indicate the expected public response if, for example, a plan allocates 70 percent of the campaign budget for prime-time television, 20 percent for daytime television, and 5 percent each for outdoor advertising and radio. The tables can also show what effect a change in those proportions would have on total public response.

Advertising statistics include complex variables, such as one that FCB calls *noticing weight*–a measure of how likely the audience is to notice a given ad in a particular advertising medium. Certain magazines have high noticing weights, which indicate that their readers tend to look carefully at the ads.

**Taking Effect**

*Adeffect* conveniently allows FCB media planners to make full use of the agency's proprietary statistical tables, the advertising industry's shared databases, and other resources. "We decided to do *Adeffect* on the Macintosh because of how easy the computer is to use," says FCB vice president Daryl L. Scott, who spent a year developing the program in Microsoft BASIC. "Our company has all sorts of computer equipment scattered around its offices, but media planners shouldn't have to be computer experts."

Scott's goal was to write a Macintosh program that could be used with a minimum of training by media planners in FCB offices nationwide. "The whole idea

*Daryl Scott shows* Adeffect's *features to FCB vice president and associate media director J Kosanke, who oversees a media planning group.*

was to give planners everything they might want to know about a media plan without having to know a single thing about computers," he says.

A communications capability accessible from within the program was essential. "We wanted to be able to have our five regional offices—New York, Chicago, Los Angeles, Philadelphia, and San Francisco—talk to one another, as well as import database files from the commercial mainframe services we subscribe to. Media planning primarily involves statistical analysis, and the best databases are on mainframes that can be accessed via modem."

The program allows FCB planners to conveniently download information from commercial databases during a media planning session. Scott has even convinced certain information services to set aside special downloading commands and file storage areas of their mainframes so *Adeffect* can receive data directly.

Furthermore, the FCB response curves have been entered into a Macintosh database that *Adeffect* can use. The response curves and other proprietary statistical tables are supplied to media planners on separate disks along with the program disks.

Using *Adeffect,* planners who might have spent months developing a media plan according to FCB's system can come up with a plan in a fraction of that time. More importantly, the program enables planners to change variables and immediately see the effect of those changes on a campaign's projected results. "What-if" plans can be saved and compared, forming a basis for an informed decision on how to best achieve desired results.

### Planning in Parts

*Adeffect* is designed in three sections: the media plan editor, in which elements of a plan are entered or modified; the response curve developer, in which response curves for combinations of advertising media can be investigated and altered; and the report generator, from which a variety of tables, graphs, and flowcharts can be displayed and printed. As the center of the program, the media plan editor is where you start (see Figure 1).

One of *Adeffect*'s most powerful features is that in almost every case a click on any element on the screen is all that is necessary to take a look at the element's underlying data. For example, clicking "Magazines" in the media plan window takes planners to a media detail window with the names of magazines selected for the campaign.

"Clicking on any of the names displays a specific window for that magazine," Scott explains, "along with specifics about actual insertion dates, cost per insertion, and various statistical factors." The media plan is automatically adjusted when planners alter the variables or delete a magazine from the plan (see Figure 2).

*At FCB's Park Avenue offices, Scott shows how slides of Macintosh screen shots are often part of presentations to clients. A Mac running* Adeffect *is also used to demonstrate the options in a media plan.*

*Adeffect* generates reports in tabular or graph form, displaying media elements in various combinations. Eight tables can be viewed and printed out, and pie, bar, or line graphs can be plotted for any data in the plan. Up to four graphs can be active and available for instant screen display. Text that highlights important points or provides commentary can be added to the graphs before the report is printed (see Figure 3).

### Client Interaction

The portability of the Macintosh has been a factor in its success at FCB. The machine can be taken to conferences as an interactive visual aid. Scott describes how a media plan was presented to a client before the Mac became part of the FCB planning system: "The media planner would be surrounded by dozens of charts and tables and figures and would try to walk a manager through it all.

"Now the Mac can be used to present an entire media plan to a client. We can carry the Mac into a conference room, turn it on, and display the complete media plan. Then by clicking on any detail–say, prime-time TV–we can display all the data that went into generating that portion of the plan. That way the planner can graphically demonstrate all the assumptions that were factored into each part."

Because of *Adeffect*'s "what-if" capability, the implications of any changes that the client suggests can be quickly understood. Scott concludes, "Clients can take part in the process in a way they never could before."

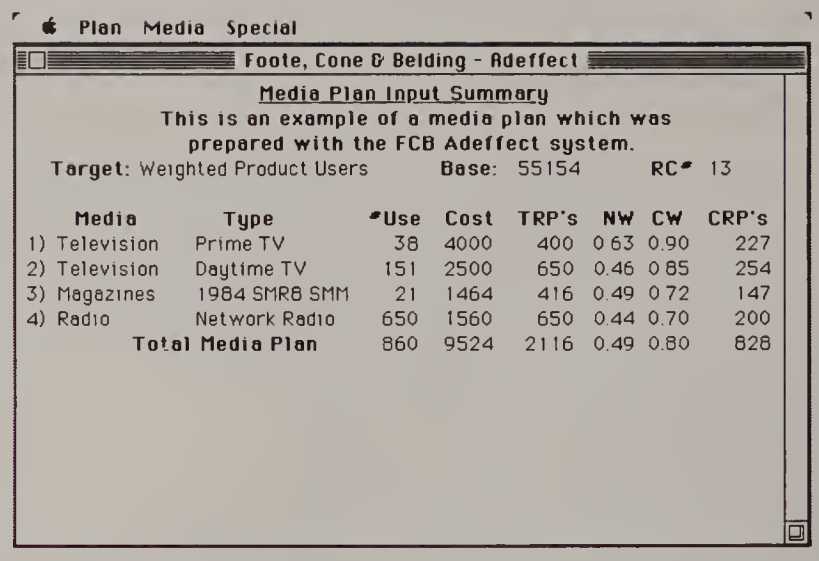



***Figure 1***
Adeffect *starts in the plan editor, where the components of an advertising campaign are entered and altered. Clicking any item in this plan summary displays a window detailing facts and figures relevant to the item.*

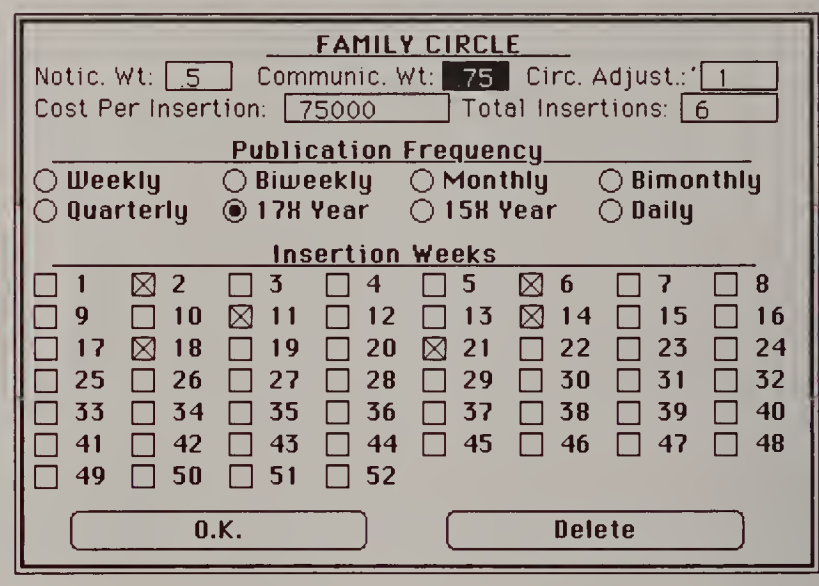



***Figure 2***
*A dialog box allows FCB planners to determine how a specific advertising medium is used in a media plan. Values in the plan related to variables such as total insertions and communication weight are automatically adjusted when you click OK.*

### Checking the Checker

If there are three levels of prevarication–lies, damned lies, and statistics–then how could planners be sure that *Adeffect*'s calculations and statistical tables were correct? In other words, who checks the checker?

"I do," Scott answers, bristling a bit. "I've checked *Adeffect* against the same sets of variables on the old system. My calculator has done overtime."

Scott says the program extrapolates and compares various statistical models and procedures. "And many elements of *Adeffect,*" he says, "can't exactly be tested by hand. The response curves we use are our own calculations, and their assumptions are built into our entire media planning system, not just *Adeffect.*"

### Maximizing Effect

*Adeffect* helps FCB media planning for national accounts. "One of my next projects," Scott says, "is making it work for all the variables in specific local markets, too."

Another way FCB plans to put the Macintosh to work is in focus groups or with clients, "to help the creative folks identify certain attributes they want to get across in an ad but have trouble putting into words," Scott explains. "It's not done yet, so I can't talk about it, but it harnesses the Mac's visual power to do some of the more difficult work in an ad agency–trying to explain in words the complex psychological and graphic elements needed for a campaign."

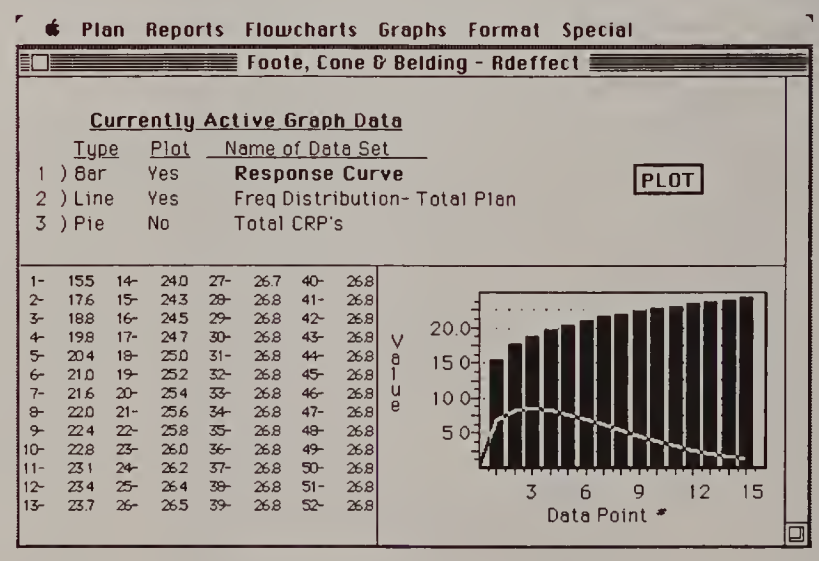



***Figure 3***
*Media planners can select data that they want to plot and can choose from among bar, line, and pie graphs. In this example a bar graph of the response curve is shown with an overlaid line graph of the frequency distribution.*

Scott seems to be hinting at software that helps explore the gray area of intellectual tasks between the visual and the verbal. At FCB that gray area is where the nuts-and-bolts media planners and account executives meet the flights-of-fancy copywriters and art designers. Scott is aiming for a program they can all use. "I'm not sure it's possible," he says, "but I'm trying." □

*Janey Hiller is a free-lance writer in San Francisco.*

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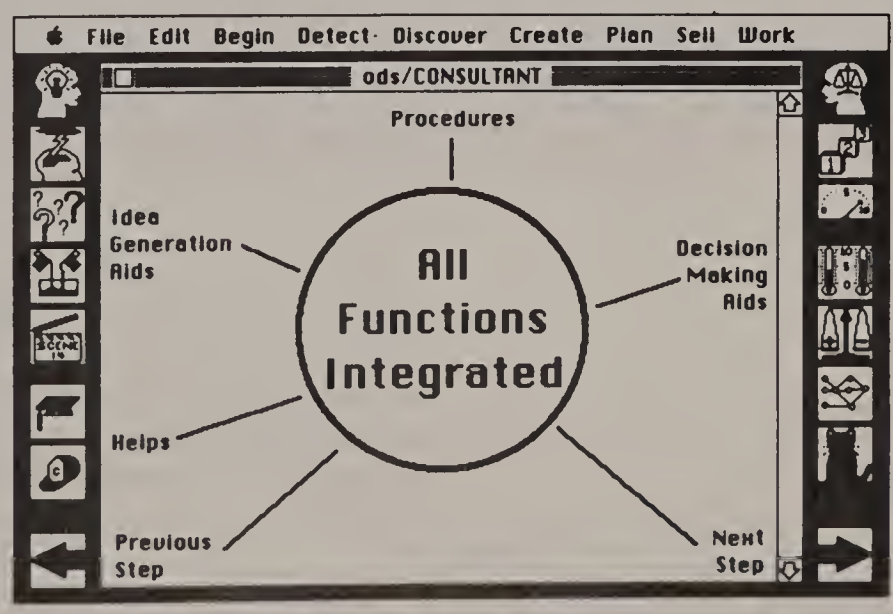


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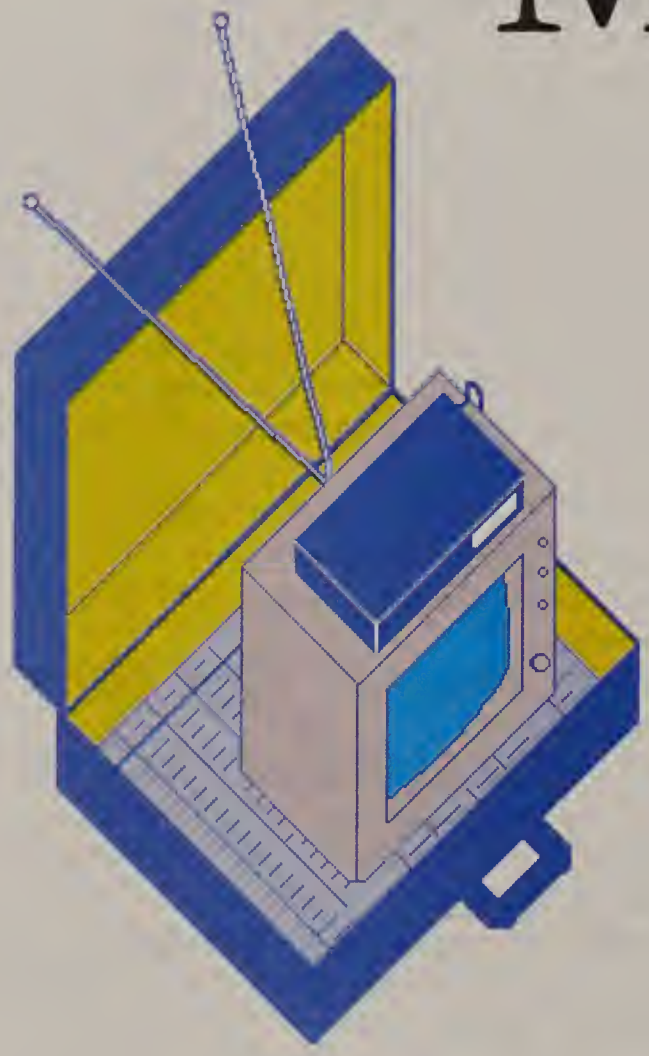
# All the Right Movies

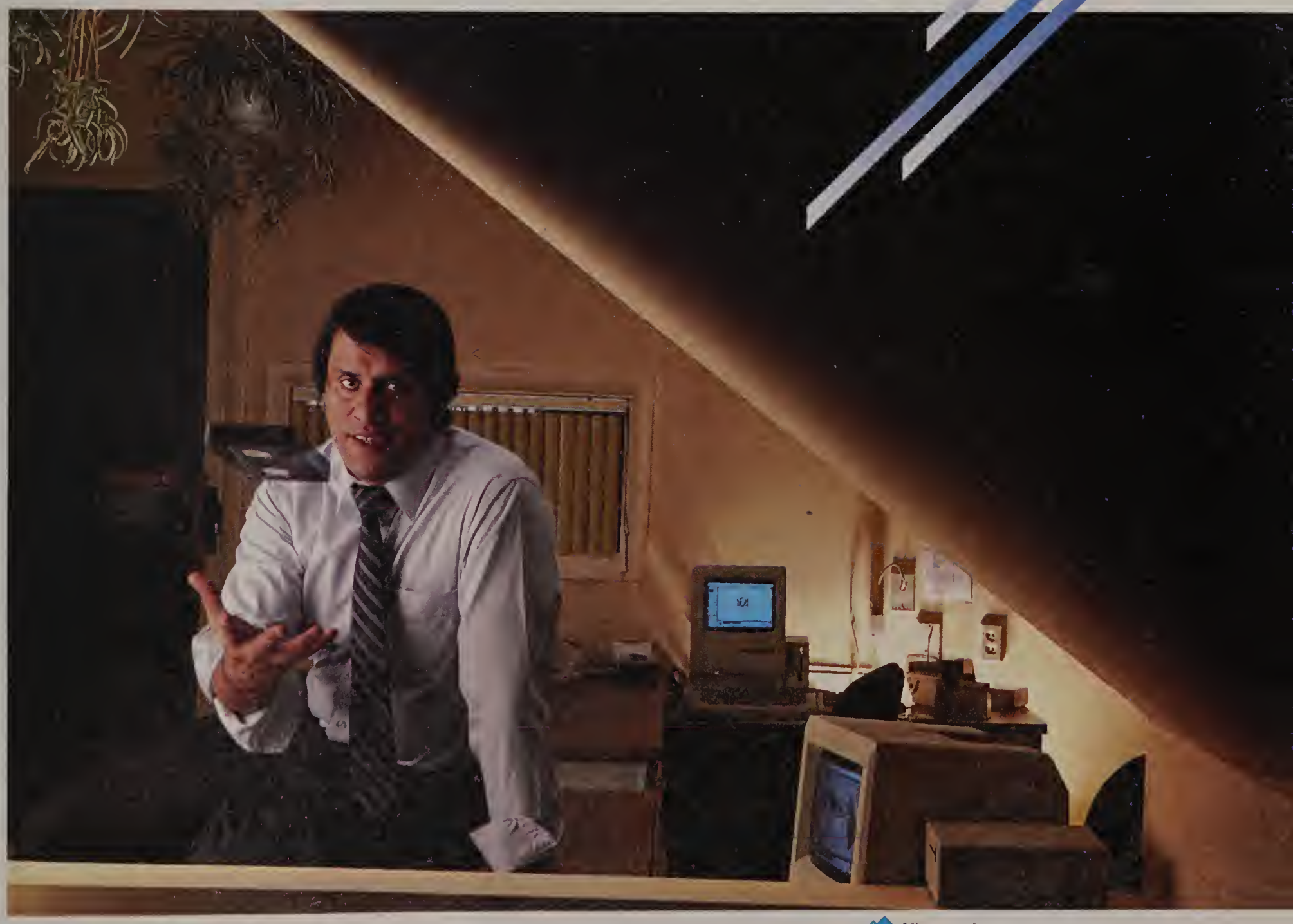


***Nicholas Lavroff***

*The Macintosh, in combination with bar-code scanners, LaserWriter printers, a high-speed duplicator, and automated shipping, is helping people decide which videocassettes to rent for home viewing. Catalogs for videocassette rental outlets are Mac-produced in Monroe, New York, offices that have AppleTalk cables built into the walls.*

Videocassette recorders are turning out to be the vanguard of a home electronics revolution that personal computers were supposed to lead. With VCR sales in this country of 4.1 million units in 1983, 8.3 million in 1984, and a projected 12 million in 1985, a significant segment of the United States population already knows how time-consuming it can be to find a particular videocassette in a rental outlet without a catalog. Most mom-and-pop operations depend on the store's promotional displays or dog-eared typewritten sheets to let customers know the inventory. As videophiles are well aware, a video store is like a library: without a catalog, the hapless patron is reduced to scanning the shelves.

Vincent Ramirez of Monroe, New York, is a videophile with business sense. He noticed that although the number of videocassette rental outlets was increasing at approximately the same rate as VCR sales, most outlets still lacked any means for producing and updating catalogs of the inventory. While this observation might have sent most people home to watch *Gilligan's Island* reruns, Ramirez decided to remedy the situation by starting Video/Print Technologies in April 1985.



*Vincent Ramirez, a videophile with entrepreneurial spirit, started his catalog service for video rental shops with a system built around the Mac.*

*Video/Print was designed with the Mac in mind, right down to the walls of the office in upstate New York: cabling for AppleTalk is built into the walls.*

### Setting Up the Service

With most of its Macintosh-centered printing system in place in fall 1985, Video/Print began its catalog printing and updating service for small video stores.

Ramirez had researched the available technology and was ready to spend $150,000 on a Hewlett-Packard system when Apple Computer announced the LaserWriter printer and the AppleTalk network. Although it was two months before Ramirez could install the Apple hardware he needed, he says he is glad he waited. Video/Print has three networks involving nine 512K Macs, each with a 10-megabyte HyperDrive, and three LaserWriters. The set-up offers a degree of automated catalog production that, Ramirez says, would have cost three times as much with the Hewlett-Packard system. In addition, the Mac system is easy to operate and maintain.

Each store that subscribes to Video/Print's service receives copies of a custom catalog of the store's holdings. The catalog is updated monthly on the basis of information provided by the subscriber. It not only lists a store's inventory but also, through an agreement with *Billboard* magazine, includes a four-page newsletter featuring best-seller and top-rental lists, reviews, and reports of industry trends. In addition, the front and back covers are customized to show the store's rental policies, rates, and coming releases. As a bonus, the Video/Print service includes a subscription to *Billboard* and an individualized counter display showing the video outlet's name and the month's top 25 videocassette titles in terms of sales and rentals.

Video/Print's basic monthly subscription entitles the subscribing outlet to a minimum of 250 copies of the outlet's general catalog and 100 copies of its adult catalog. Subscription rates are based on an average inventory of 1200 titles per store. Video/Print can supply outlets with additional copies within 24 hours at any time during the month. Ramirez says that the Macintosh printing system enables his company to supply the catalogs at a price that, for a rental outlet, is less than half the cost of producing them in-house.

*Bar-code readers and fill-in-the-blank inventory questionnaires make quick work of updating subscribers' catalogs. Here, Ginny Weibbrecht and Amy Zimmer enter data.*

### Designing the System

The Video/Print office was designed with the Macintosh in mind. Ramirez made sure that AppleTalk cables were built into the walls. Because its office was set up in April 1985, Video/Print may have the distinction of being the first actual Macintosh office.

Video/Print's system was conceived by Ramirez and designed by Nicholas Clemente of Rainbow Communications Systems in Monroe. Of the nine Macs in the system, one dubbed "Master Mac" is used to track the work done on the other eight machines and to oversee Video/Print's entire business operation. Each of the remaining Macs handles a database for one of eight geographic regions of the country.

Ramirez purchased the required hardware from CCC Computer Center in Nanuet, New York. CCC's vice president, Alan Novitz, helped develop Video/Print's combination of software and hardware accessories. Video/Print's system combines Odesta's *Helix,* Computer Identics' software-hardware duo *Mac-Barcode* and Scanstar-Mac, and Manhattan Graphics' *ReadySetGo* with Macintoshes, LaserWriters, and a Kodak Ektaprint high-speed duplicator.

The system's operation begins with the master catalog, called the pick list, which Video/Print developed and updates based on information from distributors, rental outlets, and the industry grapevine. With approximately 7000 titles, the pick list includes the title of every available videocassette. Alphanumeric codes are assigned to the titles and keyed into *Mac-Barcode,* which generates the associated bar codes. With the Scanstar-Mac accessory, an input device consisting of a wand and a box that the Mac recognizes as the keyboard, the black stripes of the bar codes are "read" back into alphanumeric data that can be entered into a database.

Both alphanumeric and bar codes of each title, as well as other pertinent information such as year of release, running time, rating, and distributor, are entered into a database in *Helix* version 2.0, which accepts the

bar code as a graphics field. *Helix* is a relational database manager, and the master catalog is considered the first relation in Video/Print's database.

The second relation consists of Video/Print's subscriber data, such as name, address, account number, and associated bar code, which is also generated with *Mac-Barcode,* as well as billing and shipping information. Finally, the third relation consists of each subscriber's own catalog, containing the inventory numbers assigned by the rental outlet to its titles as well as other information such as videocassette format (VHS or Beta) and audience (children, general, or adult).

*By means of subscriber bar codes, Video/Print's Mac system is compatible with a computerized shipping system.*

### Filling Subscriptions

First-time subscribers to Video/Print's service receive a copy of the master catalog with instructions to indicate which videocassettes are in stock and to give each title's inventory number. From that point on, subscribers are sent updates showing the videocassette titles that become available each month. The burden of supplying both the initial and the update information is light, since the subscriber has only to check appropriate boxes and write down inventory numbers. Similarly, the subscriber indicates which videocassettes have been dropped from inventory. The result, of course, is that any rental outlet's catalog is always up to date.

Because the system's main input device is the Scanstar-Mac bar-code reader, entering data into the *Helix* database is simple. Both the master catalog and the monthly updates supplied to subscribers include a bar code for each title. When Video/Print gets material back from a subscriber, all the key operator does to enter an outlet's inventory information is type the subscriber's account number and scan the appropriate bar codes. The operation automatically updates each subscriber's inventory file.

After the subscriber's inventory is updated, the data is transferred to *ReadySetGo* for formatting. Version 2.0 of the page-makeup program allows information to be formatted so that each catalog page is printed three times on an 8½- by 11-inch sheet. The LaserWriter prints the originals, which are copied on the Kodak duplicator. The copies are then collated, glue-bound, cut, and trimmed.

Finally, the catalogs are processed for mailing with Pitney-Bowes's computerized parcel-shipping system. By means of the subscriber bar codes, Video/Print's system is compatible with the Pitney-Bowes machine, whose software relates the bar code's alphanumeric data to the appropriate shipping information.

Compared to traditional production methods, Video/Print's set-up can result in significant savings in both time and money. For example, for a first-time subscriber with an average of 1000 titles in stock, Video/Print can set up a new file, enter the subscriber's inventory into the database, and print the catalog originals in less than 2 hours. By comparison, it could take up to 18 hours to reach the same stage in the printing process with traditional typesetting methods. For monthly updates the savings are equally dramatic. Video/Print can open the subscriber's file, enter the new titles, and close the file in less than 5 minutes.

### Beyond Printing

At Video/Print, the Macintosh also serves in processes other than printing. *MacProject,* for example, schedules the work load of the Kodak duplicator. In addition, order information from the *Helix* database is entered into *MacProject,* which calculates the production time required to fill orders from each subscriber.

Because it processes so much information, Video/Print is in a good position to produce statistical data on the videocassette industry. It uses *Microsoft Multiplan* to perform statistical analyses on its subscriber and inventory data, uncovering information such as city, state, and regional preferences in videocassette rentals and purchases.

Vincent Ramirez is delighted with Video/Print's Macintosh system. "We've been Macintized," he says proudly. "The Macintosh is so easy to learn that any small business can computerize its operations without missing a step or intimidating employees. Video/Print Technologies would have meant a lot more work without the Macintosh."

Expanding Video/Print's system will be an easy task. Ramirez has acquired a Bernoulli Box with 5-megabyte removable cartridges for storing database files. He plans to expand nationwide in the next 12 months, with hopes of servicing 30 to 45 percent of the more than 16,000 videocassette rental outlets around the country. Eventually, Ramirez plans to sell a franchise to cover the rest of the video-viewing world. Not bad for someone whose mother probably yelled at him for spending too much time at the movies. □

*Nicholas Lavroff is a Contributing Editor of* Macworld.

# Cleared for Takeoff

***Lon Poole***

*In Arizona the Macintosh helps more than the imagination take flight. The aeronautics division of the state's Department of Transportation uses the Mac in tracking aviation activity, developing and maintaining the state's airports, and preparing budgets, presentations, and public relations materials. The division's primary application on the Mac is a database that contains illustrations of and detailed information on the dozens of airports in Arizona that receive public funds.*

Four years ago Sonny Najera, director of the aeronautics division of the Arizona Department of Transportation (ADOT), wanted to computerize the division's Phoenix office but couldn't find the right technology at the right price. He looked at a number of affordable computer systems, but they were too hard to use. He saw the technology he wanted in the Xerox Star, but it was prohibitively expensive. When Apple introduced the Lisa, price and technology came together. Najera landed a federal grant that paid half the cost of one machine.

It was nearly a year after the first Lisa arrived before the division acquired more computers. "People were standing around waiting to use the Lisa," remembers Ken Bruno, an aviation field representative and an early Lisa user. Today the division has ten 512K Macs and three Macintosh XLs.

**Aviation Database**

The most celebrated Macintosh application to come out of the aeronautics division is an aviation services database in Telos Software Products' *Filevision*. Gary Himes, an ADOT air service analyst with no prior computer experience, developed the database on his own time in an effort to learn more about the Macintosh. The database won the grand prize in a contest held earlier this year by Telos.

The aviation database starts with a picture of the universe and, through maps of the solar system, the earth, the United States, Arizona, and individual airports in Arizona, finally gets to information on the airplane tied down on a specific parking apron. The database also has aviation information for each of the 50 states, including facts and figures about airports, aviation funding, and airline subsidies.

The aviation database contains specific information on the counties and landing areas in Arizona, including maps of the 60 or so airports that receive public funds through ADOT (see Figure 1). Using

*At the Arizona Department of Transportation, Sonny Najera launched the Mac as the aeronautics division's computer.*

*Filevision*'s highlight and print features, ADOT personnel can, for example, list the names of airport managers or locate all airports that sell jet fuel and have an elevation of over 6000 feet.

Additional information for any airport could be added to the database. Airport managers could draw on the database to monitor and prepare billings for rented or leased areas, for example. Such detail isn't available for all Arizona airports, however, because a single 400K disk can't hold a file that large. It might take 15 or 20 megabytes to store all the pertinent data for each airport in the state, Najera estimates.

Keeping the large database current is a major problem. The aviation database was first entered in March 1985 and by the summer needed updating. ADOT plans to send copies of airport data to airport managers for corrections to enter on the database. "The time needed to update the database will be minimal compared to the time it took to develop it," Himes believes. Ultimately, updates to the database will be made in part through the computer bulletin board system (BBS) that ADOT has set up using the *Mouse-Exchange* BBS program, from Dreams of the Phoenix. Still in the testing stage, the ADOT BBS has examples of *Multiplan* tables, digitized pictures, airport drawings, newsletter text, and some *Filevision* models. ADOT plans to use the BBS as a network for Arizona's publicly funded airports, forming a repository for information collected from those airports and other sources.

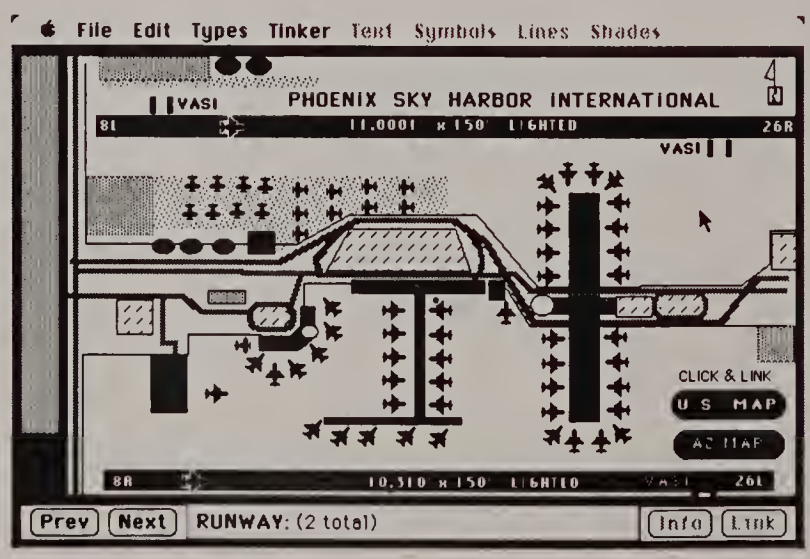



***Figure 1***
*A* Filevision *database designed by ADOT analyst Gary Himes begins with the big picture, a screen shot of the universe, but quickly reaches detailed information on aviation activity and airports in Arizona—down to the registered owner and the FAA number of the light plane parked in a specific space. The database also contains general information on ADOT's counterparts in the other 49 states.*

**Airport Sketches**

ADOT collects data on Arizona airports not only for its *Filevision* database but also for the Federal Aviation Administration (FAA). The FAA maintains a master record of nearly every airport in the country. Along with written information, the FAA requires a scale drawing of the airport, showing runways, taxiways, lighting, obstructions, facilities, and other physical features. At present a skilled draftsperson spends 2 to 4 hours per airport drawing pencil sketches for the FAA. In the same time, Steve Cohen, an ADOT state services intern with no formal drafting experience, can prepare a superior drawing with *MacDraw,* which simplifies highlighting or labeling parts of the sketch. Although

*Najera thinks the FAA should adopt the Arizona system nationwide, since the airport scale drawings are so easy to update.*

drawing the airport sketch isn't significantly faster with *MacDraw,* editing it is. *MacDraw* makes changing a runway's length or adding a parking apron as easy as correcting a word or adding a paragraph with a word processor.

ADOT has submitted samples of airport sketches done with *MacDraw* to the FAA for approval. Najera thinks the FAA should adopt ADOT's system nationwide because of how easy the drawings in an electronic database are to update. "We would almost be doing away with our job," he concedes with a smile that says he's not too worried about finding time on his hands.

**Public Outreach**

Najera and his staff often make presentations before transportation boards, county officials, city officials, and aviation associations. The ADOT personnel like to dress up their presentations with graphs, illustrations, and graphics created on the Macintosh with *Microsoft Chart, MacDraw, Filevision,* and Thunderware's *ThunderScan* video digitizer. To make sure everyone in the audience can see the Mac screen during a presentation, the ADOT people attach a computer projector to a video adapter on the Mac. They've even let the Macintosh narrate a presentation, piping the voice generated by *SmoothTalker* through a public-address system.

ADOT publishes a monthly aviation newsletter with the Mac. Previously, articles were written in longhand, typed, and sent out for typesetting. Typeset text, called galleys, was then proofread, corrected, and pasted into pages. Now aeronautics division personnel write and edit articles in *MacWrite* and then send the text to a typesetter via modem. Galleys are still pasted on boards to prepare camera-ready copy, although ADOT plans to use a page-makeup program such as *MacPublisher* or *ReadySetGo* and to print full-page layouts on a LaserWriter.

**Taking Care of Tarmac**

One of ADOT's major responsibilities is building and maintaining Arizona airports. The agency's five-year construction program, which must be updated annually, is set up as a series of *Multiplan* worksheets. The cost estimates for each construction project go to the state transportation board for review and approval.

To further automate its tasks, the aeronautics division is participating in a joint venture to develop custom software, called *EchoPave,* that helps monitor and maintain airport pavement. ADOT is contributing its expertise in "pavement management," and Western Technologies, an engineering and testing laboratory, is providing the BASIC programming skill.

Pavement management involves testing samples for forms of deterioration such as cracking, corrugation, depression, erosion, oil spillage, and weathering. With *EchoPave* an airport manager, head of maintenance, or secretary enters test results on a Macintosh. The program plots the test results against standard curves and calculates the severity of the problem. It then prints an inch-thick report showing cost breakdowns of different construction strategies. "We may not have the financing this year to fix a certain runway, so the report tells us what will happen if we postpone repairs until next year," Najera explains.

**Neighborly Airports**

Last February ADOT hired a consultant to do a land-use compatibility study. ADOT required that the study results be in a pictorial database on a 512K Macintosh. Not surprisingly, the consultant selected *Filevision.* For each airport in the study, the database includes a drawing showing which agencies—city, county, state, or other—have jurisdiction over the surrounding area. The drawings show clear zones and approach zones for runways, including any airspace conflicts with obstructions such as hills or power lines. Noise level contours, shown in different patterns, identify existing and potential conflicts with land development

*Aeronautics chief Sonny Najera and air traffic controller Mel Johnson survey the instrument readings in the observation tower as day breaks at Sky Harbor International Airport in Phoenix.*

*The* Filevision *database of Arizona airports is the brainchild of Gary Himes, who had never worked on a computer before trying his hand on the Mac.*

near airports (see Figures 2 and 3). Najera observes, "If Los Angeles had done a similar study when it started developing LAX, it wouldn't now be going through a massive multimillion-dollar land acquisition."

### Future Flying

ADOT is also using *Filevision* to plan a model airport at the Grand Canyon. The database is keyed to a map of an automated airport control system. The map shows locations of and connections among monitoring sensors that will track noise, aircraft activity, cloud cover, ground moisture, and even the height of trees that may grow too tall. The sensors will be tied into a computer, providing automatic updates to an electronic database. Large-screen terminals will tell visitors to the Grand Canyon about park activities and display flight information.

New ways to use the Mac are taking off at ADOT. The aeronautics division is starting to plan its 80 construction projects with *MacProject,* which has the required cost-tracking capability. It is also working with the accounting firm of Peat, Marwick, Mitchell & Company, which also uses the Mac extensively, on a program to allow the remote auditing of construction programs and grants.

The people of the aeronautics division found in the Macintosh more than a convenient way to automate the office. By capitalizing on the graphics interface, they have designed new ways to ensure clear skies in the Arizona flyways for a long time to come. □

*Lon Poole is a Contributing Editor of* Macworld.

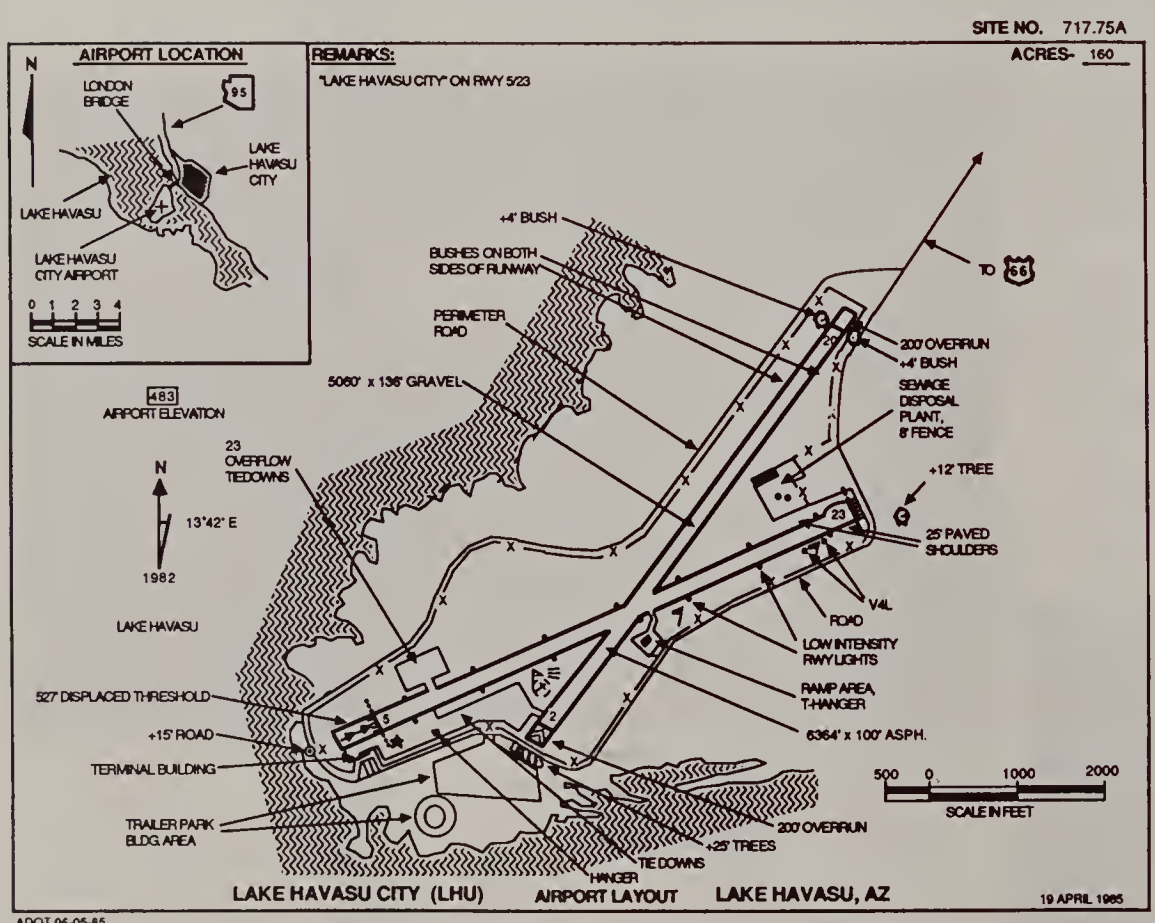



***Figure 2***
*A land-use compatibility study commissioned by ADOT analyzed the present and potential impact of each Arizona airport on surrounding areas. In a* Filevision *database, the study organized detailed information, such as runway lengths and even the heights of trees or other possible obstructions. This example shows Lake Havasu City airport.*

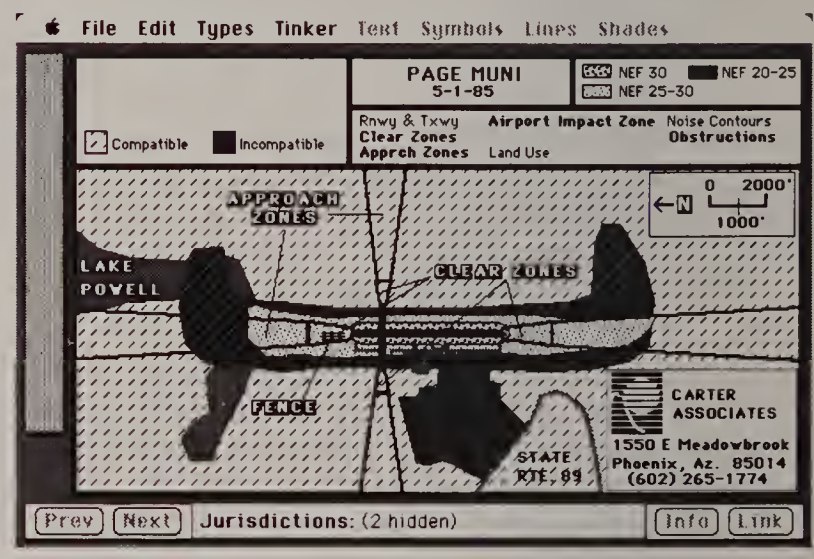



***Figure 3***
*Prepared as part of an ADOT land-use study, this drawing shows noise levels and airspace boundaries associated with runway approaches to the airport in Page. The study helps identify incompatible land use and avoid costly land acquisitions by the airport.*

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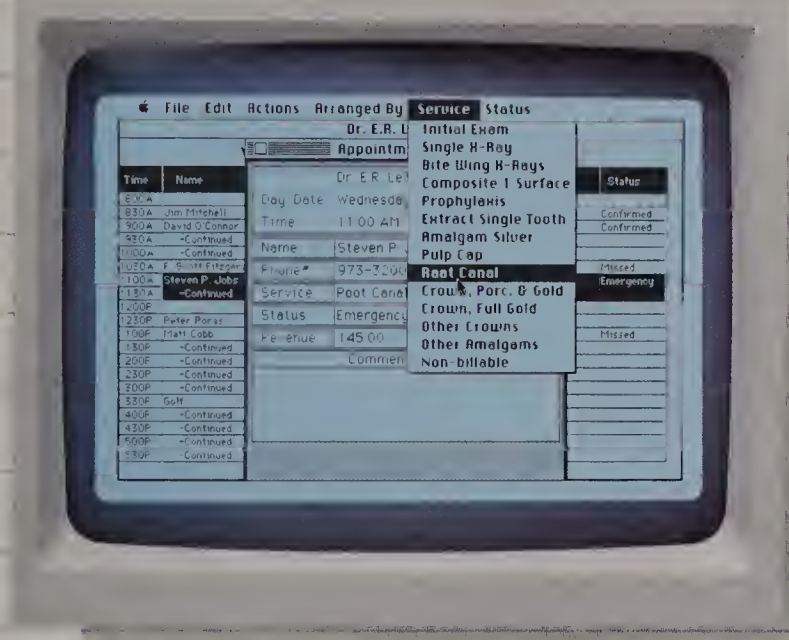


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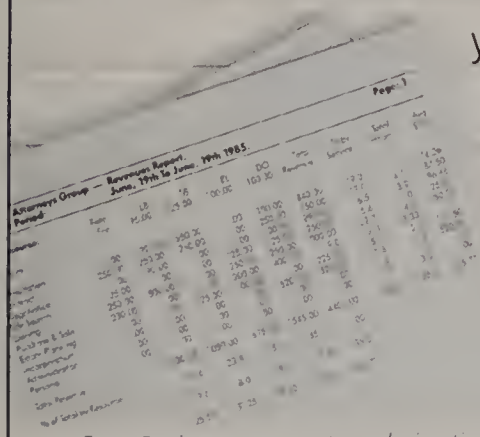

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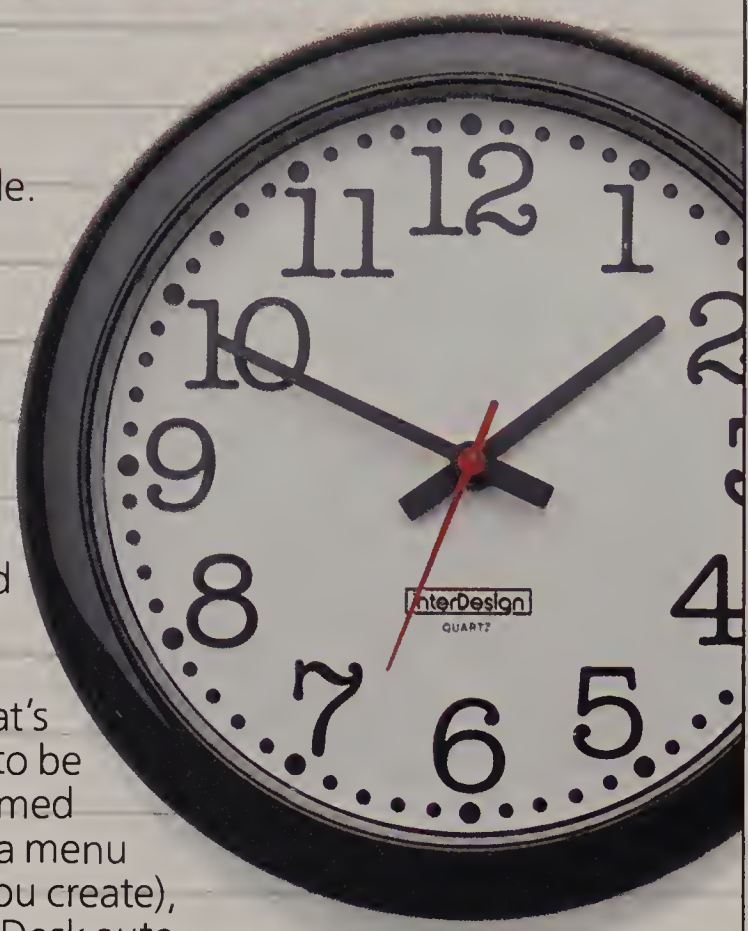


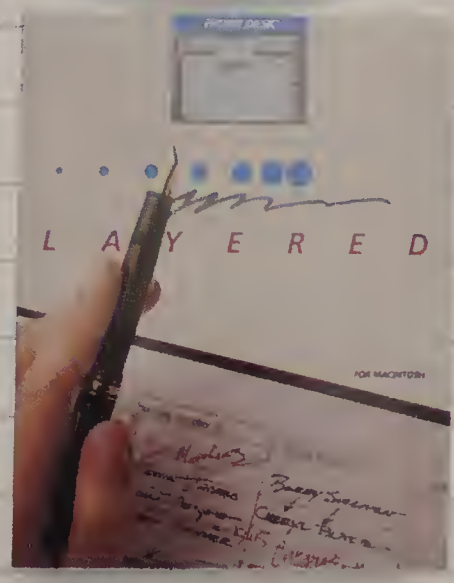


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**Circle 125 on reader service card**

# Behind the Hollywood Scenes

***Jeffrey S. Young***

*Although the Macintosh's heralded "small footprint" can't be found in front of Mann's Chinese Theater in Hollywood, the machine is nevertheless making its debut in the motion picture industry. The Macintosh is proving to be a valuable assistant to an independent filmmaker, who uses the Mac for everything from preparing budgets to sketching animated sequences. The Mac is also streamlining the operations of a film distribution company.*

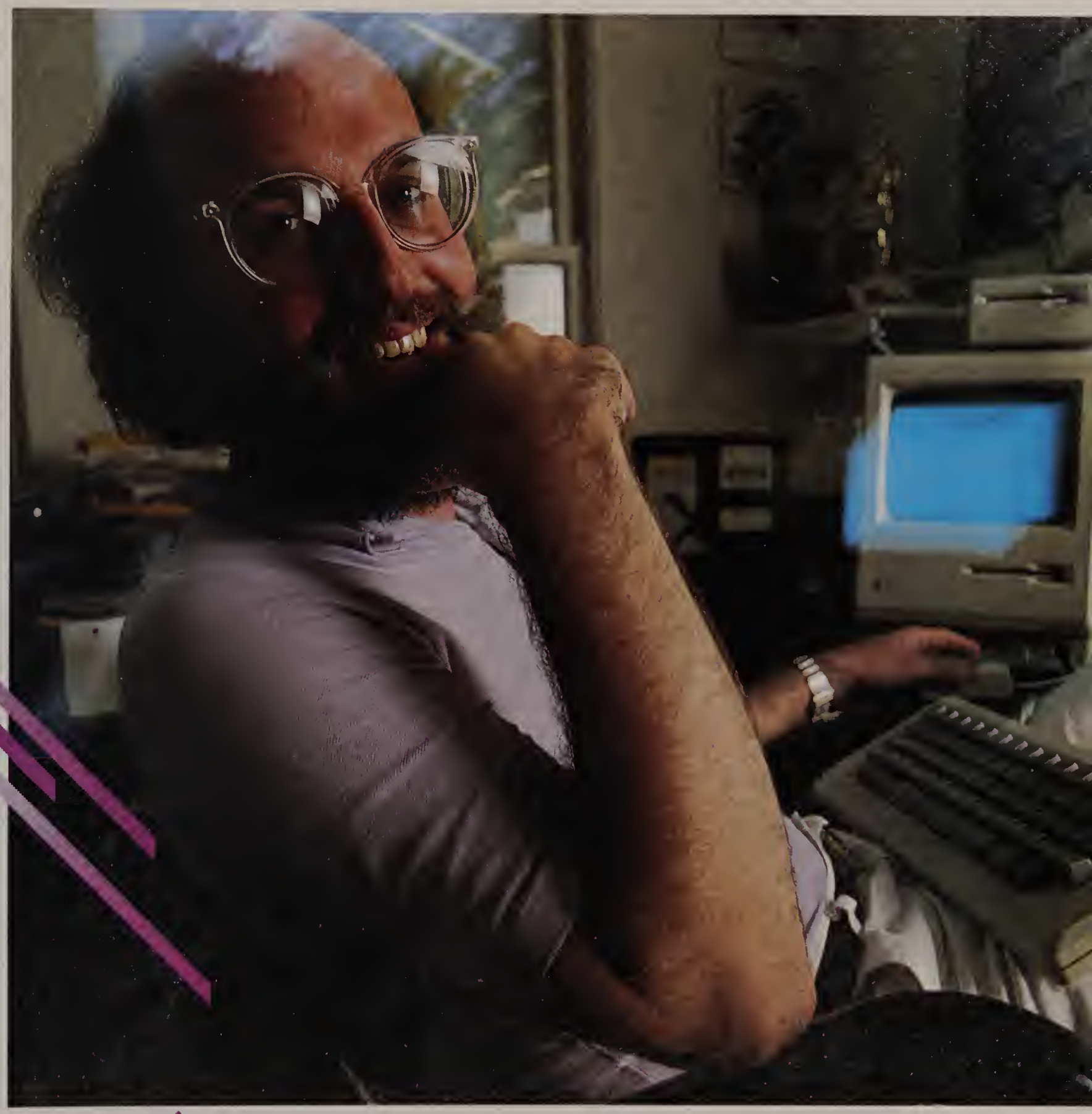
Ben Shedd is a graduate of the University of Southern California (USC) School of Cinema/Television, where he now coteaches a class called "Producing the Nontheatrical Film." As Shedd describes it, the class deals with "what to do for those ten years before you become an overnight success in Hollywood." He also lectures at the California Institute of the Arts, where he coteaches a class nicknamed "Survival," which gives pointers on writing and directing small films. "The class is designed to help you think creatively about how to produce films so that you can hire the best director possible: yourself."

**Documentaries and Documents**

Shedd practices what he teaches. He has produced and directed numerous films, including the Academy Award-winning documentary called *The Flight of the Gossamer Condor,* which chronicles the flight of the first successful human-powered airplane. He recently finished a movie called *Songwriter: Making the Music,* which is about the making of a Willie Nelson and Kris Kristofferson feature film.

Shedd was also a producer, director, and writer for television's "Nova" series. There he met Cary Lu, the author of *The Apple Macintosh Book,* one of the first books about the Mac. "I read the first page, on which Lu states, 'I had never heard of any microcomputer that was sufficiently interesting to write a whole book about.' That reflected my attitude when I was at 'Nova.' I had to be somewhat cynical about technology. And his next line was, 'Here is the book.' Knowing who Lu was and how he approached technology, I put my money down on a Macintosh right after it was introduced."

One of the many tasks of independent film producers is planning and presenting budgets. Before he bought a Macintosh, Shedd did his budget calculations



*Producer and director Ben Shedd's Mac is in both the* show *and the* business, *used for tasks ranging from animating storyboards to writing film proposals.*

on a desktop calculator and typed up proposals on an IBM Electronic typewriter. "I was looking for a quick way to do budgeting," says Shedd. "A producer has to take all sorts of factors into account: the cost of equipment rental, salaries and overtime, travel expenses, taxes, how much film stock to buy, and so on. Once you've got a proposal all typed up neatly and you present a bid, the client often says, 'no, that's too high,' and you have to recalculate everything and type it again for the nth time. That process can take days. *Multiplan* had lots of appeal for me."

Creative people often use the resources at their disposal in ways that few of us would think of. After buying his Mac, Shedd immediately wrote a set of templates for *Multiplan* that enabled him to calculate standard film budgets. In addition, he recently used *MacPaint* to design packaging for a home videocassette release of his *Gossamer Condor* documentary. He printed out dummies of the layout he had in mind, wrapped them around a videocassette tape box, and showed them to a designer.

**MacWrite, MacPaint, and Creativity**

Shedd also makes use of *MacWrite,* but he uses the program for more than just word processing. "I do an enormous amount of writing and revising in the course of my work," he says. "I'm always looking for ways to express ideas so that other people can understand what I have in mind. And when I'm juxtaposing images in my brain, one of the things I do is sit down with *MacWrite* and work with different fonts and type styles within a document, just to provoke me to see things differently. I'm looking for ways to create free associations and not get stuck in loops in which I think about something the same way over and over again. All those type sizes and fonts help free my imagination when I see them on the page."

Shedd also uses *MacPaint* to help clarify some of his ideas. "When I start thinking about a project these days, I start up *MacPaint* and try to come up with an icon, a logo, or a visual image that tells me what the film is about. I spend a couple of hours with *MacPaint* dreaming up ideas. I find this process a useful and stimulating tool–one that I wouldn't have discovered without the Mac. I'm not comfortable drawing anything by hand, but suddenly I have a graphics tool that allows my brain to spend time daydreaming while my hand draws. The images I create can help my clients focus their ideas, too."

While Shedd has found some novel uses for *MacWrite* and *MacPaint,* the most intriguing work he is now doing involves Hayden Software's *VideoWorks* animation program. It's hard to imagine a practical use for an animation program . . . unless you're a filmmaker.

"As a filmmaker I'm in the business of juxtaposing images," explains Shedd. "Combinations of pictures have an impact on people. With *VideoWorks* I can test out the impact using my Macintosh. I can take a storyboard that an artist has drawn for me, digitize the image, and play with it in *MacPaint.* Then I can combine images in *VideoWorks* and see them move in real time, add sound effects if I want to, and see if that particular juxtaposition of ideas creates the effect I want for my film."

*VideoWorks helps Shedd sketch ideas for film sequences without going through the time-consuming steps of traditional animation.*

Shedd claims that *VideoWorks* helps him sketch ideas for film sequences without going through the time-consuming steps of traditional animation. "You used to have to design an animated sequence, draw it, shoot it, take a look at it, redesign it, shoot it again, and so on forever. Now, once you draw or digitize the imagery, you can reposition it, redesign the animation, and run the animation at different speeds, forward or backward, all from within *VideoWorks.* If I'm working with someone on a film, I can readily show that person what I think a sequence should do."

Another of Shedd's favorite Mac programs is Brainpower's *ChipWits,* whose visual programming language introduces people gently to the world of programming. "I'm not a programmer, but as a production manager, filmmaker, and editor, I'm constantly thinking about many different avenues to achieve what I want in the most cost-effective and efficient way. *ChipWits* stimulates that kind of thinking because it pushes you into making lots of mistakes and trying lots of solutions. In my work I'm always trying to get to the far end of a project, and I'm always looking for the ideas that will get me there the fastest. I recently came across a quote from Nobel laureate and physicist Niels Bohr, who said, 'Genius consists of the ability to make all the possible errors in the shortest possible time.' I'm convinced that's true, and I think that's *ChipWits* in a nutshell."

Shedd continues to experiment with all the Macintosh software he can find. He is active in his local Macintosh user group, where he is often introduced to new programs. He uses a good deal of public-domain software and has figured out how to make use of menu and resource editors to customize Mac programs, adding his own icons, menus, and startup screens. He is currently experimenting with writing screenplays in *Microsoft Word,* setting up formatted pages.

In addition to helping him explore and express his ideas, the Mac aids Shedd in the more mundane aspects of his work. He plans to buy a modem soon so he can send budgets and correspondence to colleagues on the east coast. He recently used his Macintosh to demonstrate to his USC class how to prepare a film budget with *Multiplan*. "Part of the reason the Macintosh is essential to my life is that I run my business on it," he says. "I have a lot of business correspondence and bookkeeping to do. I hesitate to use the word *fun* when I explain why I chose the Mac–the word shows up too many times in discussions of the Macintosh–but the Mac lets me expand its abilities and provokes me to use it in new ways."

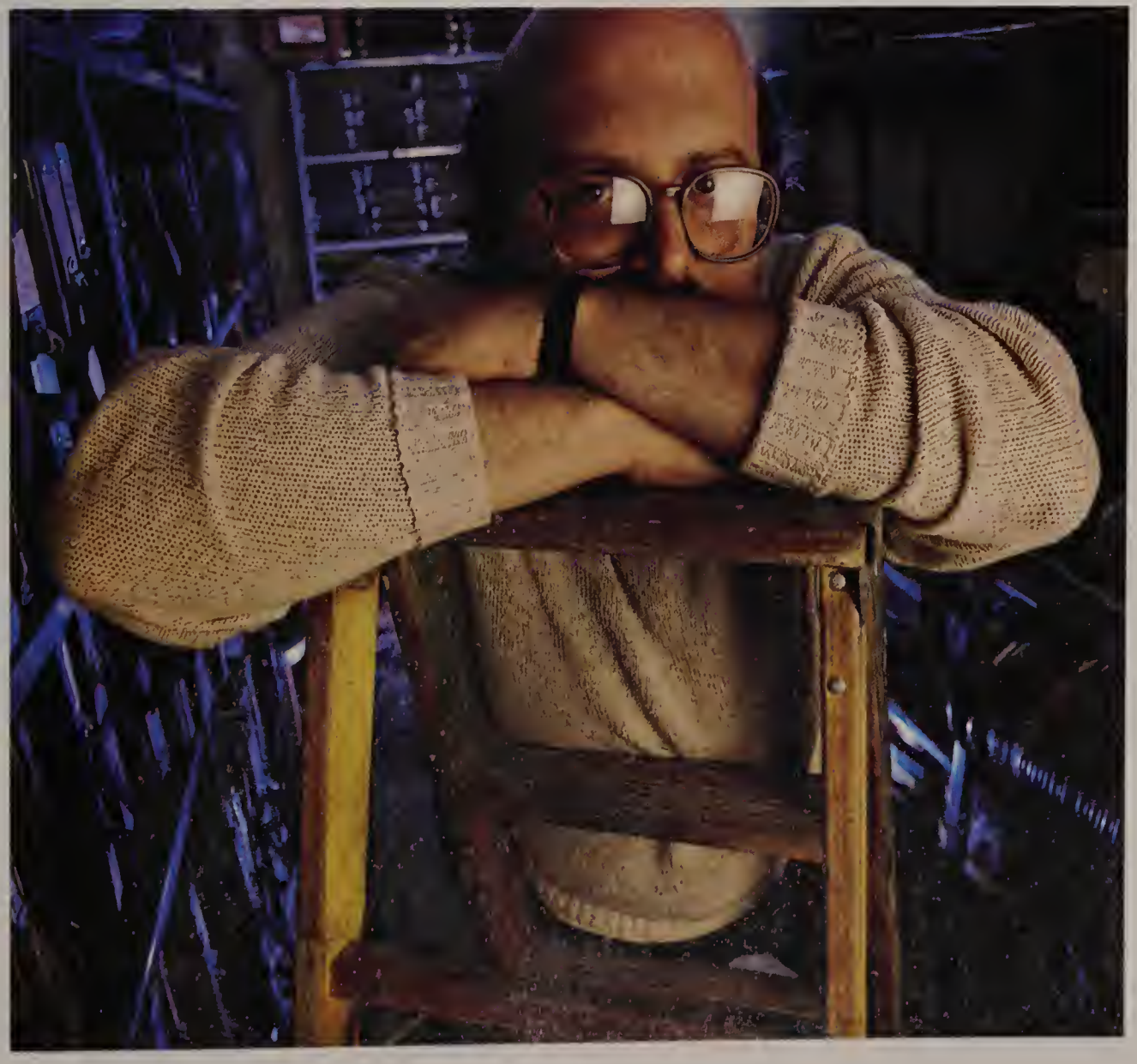
**Film Distribution**

Making a movie like *The Gossamer Condor* is only half the battle. How do films like that one find their way to the public? The answer in Shedd's case is a company called Direct Cinema. Direct Cinema sells and rents hundreds of "alternative" films to public libraries, schools, and community groups nationwide. "We're a distributor of short films, animated films, and the kinds of documentaries you see on public television," explains Mitchell Block, the company's founder. Block is the Emmy Award-winning filmmaker who coteaches with Ben Shedd at USC and the California Institute of the Arts. He founded Direct Cinema because "as a filmmaker I felt I had to find a better way of getting my films to audiences."

When Block started his company seven years ago, he planned to buy a computer but couldn't afford one. "We were looking at IBMs, Hewlett Packards, and other machines that were in the $100,000 range at that time and are around $40,000 today. Price was one big reason we chose the Macintosh. The other major reason is that the Mac is the only computer that lets you get part-time employees writing memos within 5 minutes of the time they see the machine." Direct Cinema has several Macs linked to a Macintosh XL, which operates as a file server using *XL/Serve* from Infosphere.

Direct Cinema has an inventory of about 250 titles, on both film and videotape. Yearly sales are just under a million dollars. In pre-Mac days Block's company kept track of thousands of customers, along with purchasing patterns and cross-referenced lists of titles, by typing up individual cards that were sent to a list management company. Every time a customer's address, a film's price, or other information changed, the card had to be pulled by hand, retyped, and refiled.

Now Direct Cinema uses various database programs, including Software Publishing's *pfs:file/report,* to send out targeted mailings every six weeks, breaking down the mailing list into interest groups for new releases and special offers. Peachtree Software's *Back*



*In the high-pressure film industry, distributor Mitchell Block finds his Mac invaluable for last-minute revisions of contracts and budgets. The Mac also keeps Block's database of titles and customers up to date.*

*to Basics* accounting package handles the company's financial records, and *Multiplan* templates calculate producer royalties and income estimates. Designers use *MacPaint* and *MacDraw* to produce ads and design packaging mock-ups for the company's videocassette tapes. In the near future Block plans to produce individualized catalogs for major clients on the LaserWriter.

*Designers use MacPaint and MacDraw to produce ads and design packages for videocassettes.*

**The Perils of Computerization**

"Our business is growing at a rate of between 50 and 60 percent a year," comments Block. "We're able to handle that growth rate without adding more full-time employees solely because of computerization. Everyone is able to do a great deal more without working longer hours. In business school I saw case after case in which big businesses added computers and suddenly were saddled with a data processing department that included high salaries for programmers and other computer experts. So adding computers often ended up costing more than the old systems. But the Macintosh lets businesses add computers without adding employees; people who did their jobs manually before can suddenly do more.

"I'll give you an example. I used to use an IBM Correcting Selectric, and I could write about 10 letters a day. Now I have over 60 form letters set up, and I can send out 30 or 40 a day. The Macintosh executive doesn't need a secretary. Using form letters as templates, I can respond to all my day-to-day correspondence.

"The Mac also streamlines operations when it comes to revising contracts. Our standard distribution contract is around ten typewritten pages; it takes maybe half a day to type one up. Now I can enter changes to a contract on the Macintosh, save both the original and the revised versions on disk, and send out the new version in an hour. The lawyers who review the contracts always thank me for putting the changes in boldface, which is easy to do on the Mac."

**Combining Programs**

A list of customers and film titles doesn't do much good unless the information can be updated and manipulated. Direct Cinema uses *Microsoft File* to assign an account to the appropriate salesperson by zip code, track the distribution of film previews, and follow up on a prospective sale with letters and phone calls. Once an order comes in, it is recorded in a *pfs:file/report* document, which contains information such as how many copies of a particular film are sold, the locations of the buyers, and expenses incurred for each sale. The company keeps a film price list in *Multiplan,* so a price can be changed without retyping the list.

Since information from any of the databases can be saved in ASCII format, Direct Cinema staff can transfer data stored in one program to another, sorting for different variables and using whichever program is best for a particular need. Say that a list of titles under $1000, which can be generated from *Multiplan,* needs to be sent to a specific list of customers, which is stored in *Microsoft File.* By saving the sorted data in ASCII, producing form letters with *Microsoft Word*'s mail-merge capability, and printing labels with *pfs:file/report,* a targeted mailing can be done completely on the Mac.

Block finds that this modular approach to data management lets him improve his office system as more software becomes available. "I find that it's better to use multiple programs because none of the software is perfect," says Block. "Because better software is being developed all the time, a program is often obsolete by the time you buy it. But you can take the best features of one program and combine them with the best features of another. Building a business system is an evolutionary process. The ability to combine programs lets us improve our system without reentering data.

"The fantastic thing about the Macintosh," Block concludes, "is that we didn't have to change the way we were doing business. We've simply taken a number of programs, adapted them to fill our needs very simply, and become much more profitable and efficient. The key is that the Macintosh approach is a modular approach, which is a good idea not just for a small business but for any business." □

*Jeffrey S. Young is a Contributing Editor of* Macworld.

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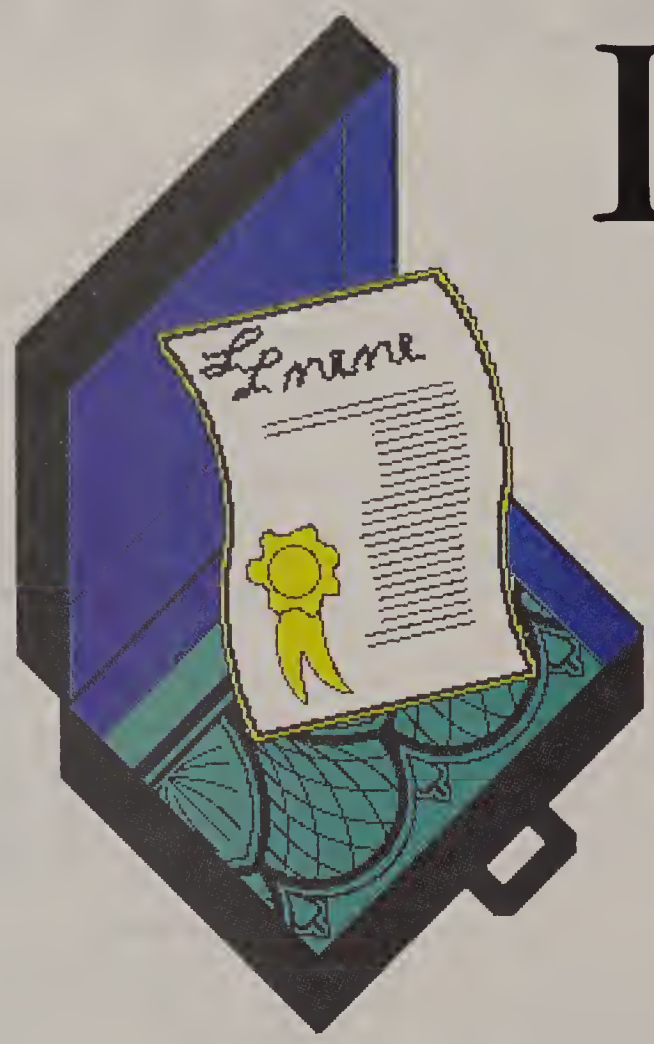

***Jeremy Joan Hewes***

*In the insurance industry, readily accessible information means the quick settlement of claims and the satisfaction of clients. Sequoia Insurance, which will process 11,000 claims this year, is phasing out its Honeywell mainframe computer in favor of the larger IBM 4331. At the same time, the California firm has adopted the Macintosh. Even as the company changes mainframes, it is setting up a sophisticated database for a network of Macs.*

At present, Sequoia's 18 Macintoshes are used in several departments of the firm's home offices in Menlo Park, California, and at branch offices in Fresno, Modesto, and Woodland. Each computer is linked through AppleTalk connections and special software to the Corvus Omninet network and to one of eight Corvus 45-megabyte hard disks. The hard disks contain *Omnis 3* databases for claims processing and check writing. Sequoia's Macintosh project files are stored on a 126-megabyte hard disk. A few Mac workstations have Imagewriter printers, and eight Macs in the Menlo Park building are linked to a LaserWriter.

In addition to connecting via AppleTalk and Omninet, four of the Macs can communicate through AppleLine with the company's mainframes, both of which remain in operation during the long changeover period. AppleLine allows either a direct link or a modem connection between a Mac and a mainframe. Sequoia is also testing Tri-Data's Netway 1000A gateway system, a communications server that allows up to 31 Macs to appear as IBM 3278 terminals to the 4331 system.

The person in charge of all the Macintosh activity at Sequoia is Bob Hoppie, administrative claim manager in the home office. A longtime observer of new technologies, Hoppie got a Macintosh in August 1984 to evaluate its usefulness for Sequoia and immediately recognized the computer's value.

"Within a month I had automated most of the functions I use to gather statistics," Hoppie says. "It used to take the better part of a day just to collect the data from all the offices and work out the figures on a calculator, and then a report had to be typed. Now it takes 10 minutes on a spreadsheet template."

*The Macintosh stands tall at Sequoia Insurance due in large part to the efforts of administrative claim manager Bob Hoppie, who tried out the computer for the firm and quickly recognized its possibilities.*

### Checks and Balances

Hoppie introduced the Macintosh to a group of employees in September 1984. In November he learned that on the first of the year Sequoia would start paying its claims with checks instead of bank drafts, which are not immediately negotiable but must be taken to a bank for collection. Hoppie decided to automate the check-writing process on the Mac. Because Sequoia would pay claims by check during the transition from one mainframe to another, Hoppie had to create a check-writing routine that would incorporate three methods of assembling the information necessary to write a check: the methods used by each mainframe and those used by Sequoia employees, who had been preparing payments manually.

Hoppie needed a database manager that could handle such a complicated task, but he was unfamiliar with the programs available for the Macintosh. Dick Applebaum, co-owner of Computer Plus stores in nearby San Jose, helped him evaluate the few Mac database programs then on the market. They found none powerful enough to meet Sequoia's needs. While attending the fall 1984 Comdex, a computer trade show where software is traditionally introduced, Hoppie and Applebaum previewed *Omnis 2* from Organizational Software of San Mateo, California. Under pressure to decide quickly on a database program, the two convinced Organizational Software representatives to give them a test copy of the program. Hoppie and Applebaum designed Sequoia's check-writing routine in *Omnis 2* in time for the January 1985 start of the new claims payment procedure. The following June the firm started its upgrade to *Omnis 3,* a more powerful database manager that is compatible with *Omnis 2* files.

With Applebaum's help for some of the difficult formulas, Hoppie designed a check-writing system so simple that Sequoia staff members merely fill in the blanks for each check as specified on the Mac's screen, save the data, and then print checks in batches. Blank checks on preprinted continuous-form stock are fed into an Okidata parallel printer, which is connected to the Mac through Microsoft's MacEnhancer. Except for the signature, which is provided by a check-signing machine or an executive, the check writing is done entirely on the Mac system.

### Added Payoffs

Hoppie cites two benefits of using *Omnis* and the Macintosh for check writing. The first is speed. "We want to pay what's fair and get claims concluded as soon as possible," he notes. "The faster we can evaluate a claim, the better."

Second, Hoppie and the staff at each branch office have information on each day's transactions at their fingertips. "Under the old system," he points out, "people who were typing checks had no idea how much they were writing out in a day. With this system, at the end of the day the *Omnis* check register gives a total of the amount spent that day, so each office can keep in touch with its spending."

Automation brought an unexpected benefit when Sequoia's supplier of preprinted check stock made an error and had to reprint the whole lot. Although the claims department had to wait five days for the new stock to arrive, the staff continued processing claims and entering data on the Mac. When the new stock arrived, a week's worth of checks were printed right away. If the department had been using typewriters to prepare checks, the staff would have had to work overtime to eliminate the backlog.

Hoppie anticipates another advantage to using the Macintosh to process claims. Because some of the statistical and accounting information entered into the Mac's *Omnis* database during check writing is also needed in Sequoia's mainframe files, Hoppie will hire a programmer to write a special module in Mac COBOL to process the required data when it is uploaded to the mainframe. Such data sharing will have to wait, however, until *Omnis 3* is modified to accept custom modules.

### The Omnis Connection

Even without the Macintosh-mainframe data link, Hoppie plans to take full advantage of *Omnis 3*'s capabilities. *Omnis 3* is a relational database manager that allows specified fields to be linked so that changes in one field affect the others appropriately. The program also enables Sequoia managers to prevent unauthorized personnel from viewing certain fields in the database. And as soon as it becomes available, Hoppie plans to use the *Omnis 3* multiuser version, which lets 40 people work on the program simultaneously.

Hoppie has developed a dozen *Omnis 3* modules, including those for check writing. "When I finish, I'll have a stand-alone system that Sequoia can use to evaluate claims. People in the branch offices can generate their own reports without having to tap the mainframe."

*Apple and IBM dealer Dick Applebaum helped select and set up Sequoia's Macintosh database management system. "I would rather sell the Mac than the IBM PC to businesses," he says, "because, all things being equal, businesses are going to exploit the Mac much more quickly."*

Hoppie also plans to merge *Microsoft Word* files with the *Omnis* database to automate writing form letters, for example letters that acknowledge receipt of a claim from an agent. Currently the 20 form letters he has developed are *MacWrite* templates.

Hoppie attributes much of the efficiency the Macintosh has brought his company to the flexibility of *Omnis 3*. "With *Omnis 3* you can make good use of the Mac interface," he states. "You can build in a help screen, for example, and put a help button right on the screen. The program provides power, a multiuser capability, and security."

**Higher Tech to Come**

Hoppie plans to expand the Macintosh world at Sequoia with more software and new peripherals. He foresees a time when laser disks can be used for data storage. He also wants to find a way to store blank forms on a laser disk or even on a ROM chip and merge the forms with claims data from *Omnis 3*.

To record forms for electronic storage, Hoppie plans to use a video digitizer because the forms often include graphics. He has already used Thunderware's ThunderScan digitizer to put the logo of Sequoia's parent company on disk, and that file is often used instead of letterhead stationery for printing memos on the Imagewriter. The LaserWriter will be the printer of choice for most forms, however.

Although the programs that are most heavily used at Sequoia are *Omnis 3, MacWrite, MacPaint,* and *Microsoft Word,* Hoppie has developed a format for case reports in Living Videotext's *ThinkTank*. He recently introduced Layered's *Front Desk* for department scheduling. He also plans to build specialized files in Forethought's *FactFinder* and *FileMaker*.

**Cooperation and Control**

While integrating the Macintosh into Sequoia, Hoppie worked closely with Pat Miller, the firm's data processing manager. Both managers are confident they chose the right computer for their needs. As Miller puts it, "On the Macintosh, an employee is up and going in under an hour. You get much more productivity."

Similarly, Hoppie finds that the Mac lets him apply his knowledge directly and immediately to his work. He states, "I've been a claims technician for 20 years. In the past, when I needed something automated, I'd go into the data processing department, and they'd sit down with a programmer. Then they'd finally give me a program, and it wouldn't be what I wanted to begin with. In fact, it would be much too complex. Now, with my technical background and expertise in claims, I can build what I want and what we need without having to depend on anybody else." □

◆◆◆◆◆◆◆◆ *Jeremy Joan Hewes is a Contributing Editor of* Macworld.

*As data processing manager at Sequoia, Pat Miller teamed up with Bob Hoppie to tackle the complex task of installing Macs while the firm changed mainframe systems.*

*Sequoia personnel (from back to front) George Keene, Betsy Weston, and Lori Furusho at work with their Macintoshes. The firm's* Omnis *database runs on Macs linked to hard disks in Corvus Omninet networks.*

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# Business Software Review

*A directory of programs for the Macintosh office, from databases and presentation graphics to livestock management and laboratory automation*

***Edited by Heidi Mitchell***

*The following pages contain a list of nearly 400 business-related programs in over 40 categories, including many vertical product categories such as health care and engineering. The list is arranged alphabetically by category and by product name within each category. Each entry consists of the program's name; the company's name, address, and phone number; and the list price. For more information contact the companies directly by mail or telephone.*

*Research assistants for the* Business Software Review *were Eileen Drapiza and Wendy Weinberg.*

## *Accounting, General Ledger*

**Accountant's Choice General Ledger**
Sierra Information Systems, Inc.
10201 Torre Ave. #210
Cupertino, CA 95014
408/725-3200
List price: $695

**Back to Basics General Ledger**
Peachtree Software
4355 International Blvd.
Norcross, GA 30093
404/564-5700
List price: $175

**BizMac General Ledger**
Applied Logic Systems, Inc.
2614 N. 29th Ave.
Phoenix, AZ 85009
602/272-9355
List price: $495

**General Ledger**
Applied Micro Solutions
P.O. Box 860
Fort Collins, CO 80522
303/484-3541
List price: $295

**General Ledger**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**General Ledger**
Palantir Software
12777 Jones Rd. #100
Houston, TX 77070
800/368-3797, 800/831-3119 in Texas
List price: $145

**General Ledger**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $695

**General Ledger**
Superex Business Software
151 Ludlow St.
Yonkers, NY 10705
800/862-8800, 914/964-5200 in New York
List price: $300

**General Ledger with Financial Reporting & Budgeting**
Great Plains Software
1701 S.W. 38th St.
Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**Macintosh General Ledger**
Lake Avenue Software, Inc.
77 N. Oak Knoll #105
Pasadena, CA 91101
818/792-1844
List price: $245

**MacOneWrite General Ledger**
Sierra On-Line, Inc.
P.O. Box 485
Coarsegold, CA 93614
209/683-6858
List price: $245

**Rags to Riches Ledger**
Chang Labs
5300 Stevens Creek Blvd.
San Jose, CA 95129
800/972-8800, 800/831-8080 in California
List price: $199.95, with Payables and Receivables $499.50

**Strictly Business Accounting System, General Ledger**
Future Design Software
13681 Willamette Dr.
Westminster, CA 92683
714/891-9796
List price: $395

**Symposium General Ledger**
Symposium, Inc.
914 Silver Spring Ave. #103
Silver Spring, MD 20910
301/587-6381
List price: $299

**VersaLedger II**
H & E Computronics, Inc.
50 N. Pascack Rd.
Spring Valley, NY 10977
800/431-2818, 914/425-1535 in New York
List price: $149.95

## *Accounting, Integrated*

**Combo**
Eureka Computer Systems, Inc.
P.O. Box 2308
Corsicana, TX 75110
214/872-2501
List price: $450

**Complete Macintosh Accounting Series**
Superex Business Software
151 Ludlow St.
Yonkers, NY 10705
800/862-8800, 914/964-5200 in New York
List price: $750

**Dollars and Sense**
Monogram
8295 S. La Cienega Blvd.
Inglewood, CA 90301
213/215-0529
List price: $149.95

**Finance**
Micromax Systems, Inc.
6868 Nancy Ridge Dr.
San Diego, CA 92121
619/457-3131
List price: four packages $795

**In-House Accountant**
United Software Industries
1880 Century Park E #300
Los Angeles, CA 90067
213/556-2211
List price: $179.95

**Maccountant**
Digital Etc., Inc.
1750 14th St.
Santa Monica, CA 90404
213/452-5636
List price: $275

## *Accounting, Inventory*

**Accountant's Choice Inventory Control**
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10201 Torre Ave. #210
Cupertino, CA 95014
408/725-3200
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Printing labels is quick and easy using **myDiskLabeler**.™ Just position the printing head on the alignment guide and select label position(s) using graphic interface. Three print qualities are available.

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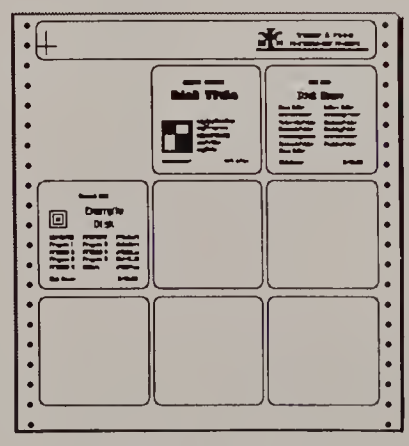
Macintosh™ (128, 512 or XL) and Imagewriter™ printer required.



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### *Accounting, Invoicing*

**BizMac Inventory**
Applied Logic Systems, Inc.
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Phoenix, AZ 85009
602/272-9355
List price: $395

**Inventory**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**Inventory Control**
Palantir Software
12777 Jones Rd. #100
Houston, TX 77070
800/368-3797, 800/831-3119 in Texas
List price: $145

**Inventory Control**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $695

**Inventory Management with Point of Sale Invoicing**
Great Plains Software
1701 S.W. 38th St.
Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**Inventory Manager**
Superex Business Software
151 Ludlow St.
Yonkers, NY 10705
800/862-8800, 914/964-5200 in New York
List price: $300

**Inventory Manager with Accounts Receivable**
Superex Business Software
151 Ludlow St.
Yonkers, NY 10705
800/862-8800, 914/964-5200 in New York
List price: $450

**VersaInventory**
H & E Computronics, Inc.
50 N. Pascack Rd.
Spring Valley, NY 10977
800/431-2818, 914/425-1535 in New York
List price: $99.95

**Invenu**
Eureka Computer Systems, Inc.
P.O. Box 2308
Corsicana, TX 75110
214/872-2501
List price: $195

**Zap! Invoice**
Aegis Development, Inc.
2210 Wilshire Blvd. #277
Santa Monica, CA 90403
213/306-0735
List price: $99.95

### *Accounting, Miscellaneous*

**Accountant's Choice Fixed Assets**
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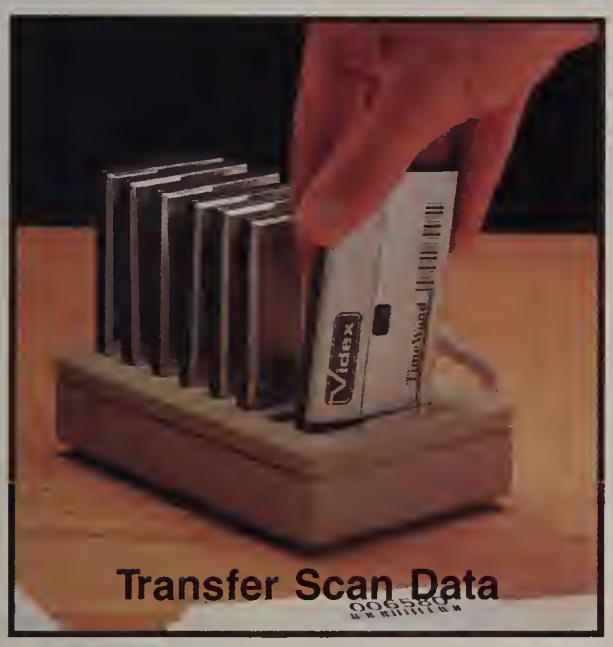
Cupertino, CA 95014
408/725-3200
List price: $695

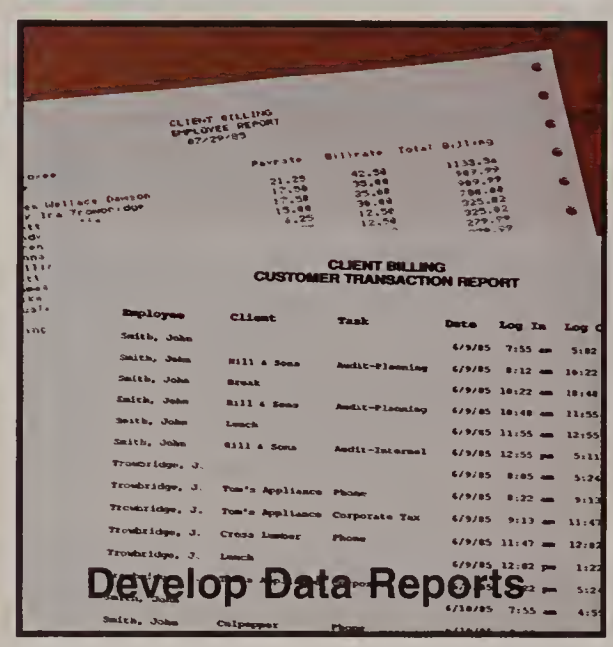
**Accountant's Choice Purchasing**
Sierra Information Systems, Inc.
10201 Torre Ave. #210
Cupertino, CA 95014
408/725-3200
List price: $695

**Accountant's Choice Sales Order Processing**
Sierra Information Systems, Inc.
10201 Torre Ave. #210
Cupertino, CA 95014
408/725-3200
List price: $695

**Fixed Assets**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

# TimeWand™ - Keeping track of time...



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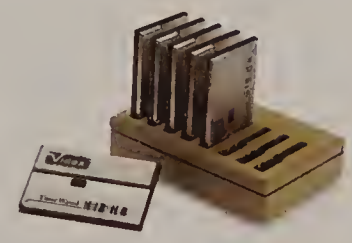
The Videx TimeWand is more than just a bar code reader. About the size of a standard credit card, TimeWand is extremely portable. TimeWand records not only bar code information but, with its built-in clock, TimeWand also records the time that ***each*** code was scanned. With up to 16K of internal memory, TimeWand can hold about 1700 scans (That's one scan every 16 seconds for 8 hours; non-stop). So you won't have to recharge on a daily basis, internal rechargeable batteries keep TimeWand running for up to 3 days of continuous use.

When the TimeWand is placed into its **recharging station**, all the information stored in the wand's memory is quickly transferred to your computer system using a standard RS232C serial port. If a computer is not handy, you can connect the recharger to a serial modem and transfer information from a remote location over ordinary telephone lines.

With our special file transfer programs, you can easily use existing software packages on your Personal Computer to generate reports. Programs such as dBase III on the IBM, Microsoft File on the Macintosh, or others, such as Jazz, MultiPlan, Excel, or Lotus 123. These powerful software tools make the most of the information you have gathered.

Throw your old time monitoring techniques away. We've now entered the age of TimeWand, the scan of the future.



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In quantities of 50 or more.....**$99**
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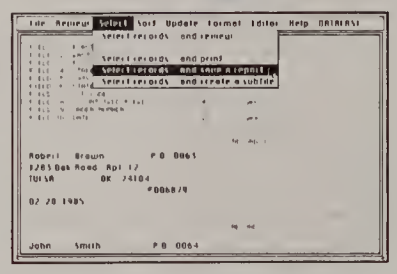

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- Runs on 128k or 512k Macintosh. External disk drive and hard disk are supported but not required

MasterCard

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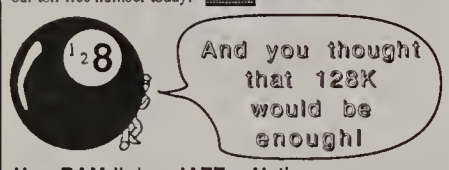
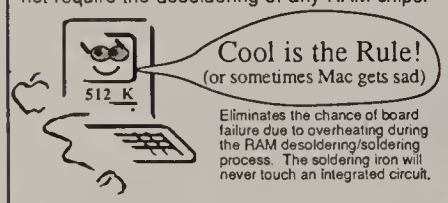


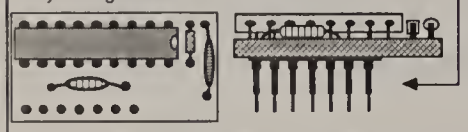

**Use RAMdisk • JAZZ • Helix • Ready Set Go • ThinkTank 512K • Apple's 68000 Developers Kit • Switcher and greatly enhance the operation of many other popular software packages.**

MACohm Projects 512K Mac UPgrade does not require the desoldering of any RAM chips.




Eliminates the chance of board failure due to overheating during the RAM desoldering/soldering process. The soldering iron will never touch an integrated circuit.

Our upgrade uses a unique integrated circuit board that is soldered into seven empty holes in Mac's logicboard (Thanks Apple!). This means that there are no jumper wires exposed and that only a single trace needs to be cut.



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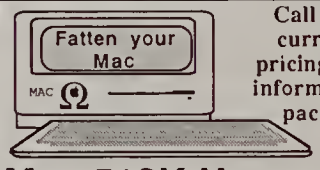
We will ship you tools and a complete set of instructions for removing your Mac's motherboard and packing materials for shipping your board to us. Ship us your board and within 24 hours your board will be UPgraded and shipped back to you. All of our work carries a full 90 day warranty. We also provide low cost out-of-warranty board swaps and repair service.

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If you UPgrade your Mac with MACohm, you will also receive full access on our Macintosh Bulletin Board. In addition to general information and Mac tips, our board is full of Public Domain software and "Freeware" that may be downloaded at your convenience.

ΩΩ Over 250 MB installed ΩΩ
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List price: $695

**Job Cost with Estimating Costing & Pre-Billing**
Great Plains Software
1701 S.W. 38th St.
Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**MacOneWrite Cash Disbursement**
Sierra On-Line, Inc.
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Coarsegold, CA 93614
209/683-6858
List price: $245

**Materials Management**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**Order Entry/Billing**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $695

**Personal Accountant**
Softsync, Inc.
162 Madison Ave.
New York, NY 10016
212/685-2080
List price: $89.95

**Purchase Order Processing**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**Sales Analysis**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $350

**Sales Order Processing**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

## *Accounting, Payables*

**Accountant's Choice Accounts Payable**
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**Accounts Payable**
Great Plains Software
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Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**Accounts Payable**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**Accounts Payable**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $695

**Accounts Payable**
Superex Business Software
151 Ludlow St.
Yonkers, NY 10705
800/862-8800, 914/964-5200 in New York
List price: $300

**Back to Basics Accounts Payable**
Peachtree Software
4355 International Blvd.
Norcross, GA 30093
404/564-5700
List price: $175

**BizMac Accounts Payable**
Applied Logic Systems, Inc.
2614 N. 29th Ave.
Phoenix, AZ 85009
602/272-9355
List price: $395

**Rags to Riches Payables**
Chang Labs
5300 Stevens Creek Blvd.
San Jose, CA 95129
800/972-8800, 800/831-8080 in California
List price: $199.95, with Ledger and Receivables $499.50

**VersaPayables**
H & E Computronics, Inc.
50 N. Pascack Rd.
Spring Valley, NY 10977
800/431-2818, 914/425-1535 in New York
List price: $99.95

## *Accounting, Payroll*

**BizMac Payroll #1**
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2614 N. 29th Ave.
Phoenix, AZ 85009
602/272-9355
List price: stand-alone $150, integrated $495

**BizMac Payroll #2**
Applied Logic Systems, Inc.
2614 N. 29th Ave.
Phoenix, AZ 85009
602/272-9355
List price: $395

**MacOneWrite Payroll**
Sierra On-Line, Inc.
P.O. Box 485
Coarsegold, CA 93614
209/683-6858
List price: $245

**Payroll**
Great Plains Software
1701 S.W. 38th St.
Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**Payroll**
Open Systems Inc.
6477 City West Pkwy.
Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
List price: $695

**Payroll**
RealWorld Corp.
Dover Point Rd.
Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
List price: $695

**VersaPayroll**
H & E Computronics, Inc.
50 N. Pascack Rd.
Spring Valley, NY 10977
800/431-2818, 914/425-1535 in New York
List price: $99.95

## *Accounting, Receivables*

**Accountant's Choice Accounts Receivable**
Sierra Information Systems, Inc.
10201 Torre Ave. #210
Cupertino, CA 95014
408/725-3200
List price: $695

**Accounts Receivable**
Great Plains Software
1701 S.W. 38th St.
Fargo, ND 58103
800/345-3276, 701/281-0550 in North Dakota
List price: $695

**Accounts Receivable**
Open Systems Inc.
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Eden Prairie, MN 55344
800/328-2276, 612/829-0011 in Minnesota
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800/368-3797, 800/831-3119 in Texas
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Chichester, NH 03623
800/255-1115, 603/798-5700 in New Hampshire
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151 Ludlow St.
Yonkers, NY 10705
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Norcross, GA 30093
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602/272-9355
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Yonkers, NY 10705
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San Jose, CA 95129
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P.O. Box 2308
Corsicana, TX 75110
214/872-2501
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Hutchinson, MN 55350
612/587-2940
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555 Third Ave. NW
Hutchinson, MN 55350
612/587-2940
List price: $395 including Microsoft BASIC

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Hutchinson, MN 55350
612/587-2940
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Ann Arbor, MI 48104
313/996-3838
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Magnum Software
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818/700-0510
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Rune Software
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San Francisco, CA 94122
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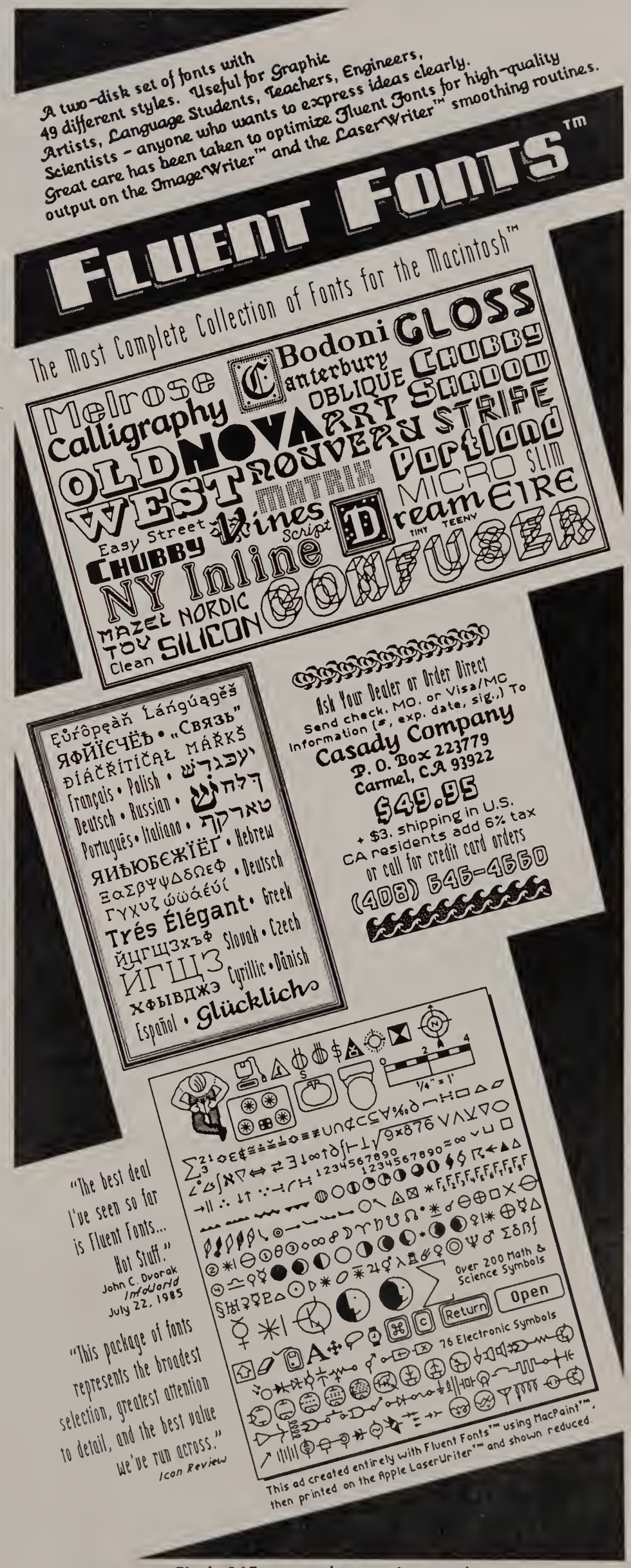

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9/85 MAC 2

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| Hippo-C level I | 78.50 |
| Hippo-C level II | 227.00 |
| **KRIYA SYSTEMS INC.** | |
| Neon | 145.00 |
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| MacASM | 87.00 |
| **MANX** | |
| Aztec 68k-C | 403.00 |
| **MICROSOFT** | |
| Fortran Compiler | 179.00 |
| Microsoft Basic 2.0 | 87.00 |
| Microsoft Logo | 74.50 |
| **SOFTECH MICROSYSTEMS** | |
| Mac Advantage UCSD Pascal | 158.00 |
| **SOFTWORKS LIMITED** | |
| Softworks C Compiler | 240.00 |

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| Apple Modem 1200 Baud w/acc. kit | 349.00 |
| Apple Modem 300 Baud w/acc. kit | 157.00 |
| **COMPUCABLE** | |
| Mac to Smartmodem Coble | 16.00 |
| **HAYES MICROCOMPUTING** | |
| Smartmodem 1200 | 364.00 |
| Smartmodem 2400 | 585.00 |
| Smartmodem 300 | 129.00 |
| Transet | 279.00 |
| **KENSINGTON** | |
| Portable Modem (300 Baud) | 86.00 |
| **MICROCOM** | |
| Mac Modem 1200 w/software | 386.00 |
| Mac Modem 2400 w/software | 555.00 |
| **PROMETHEUS** | |
| Promodem 1200 with Mac Software | 329.00 |

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| **APPLE COMPUTER** | |
| Imagewriter, UNDER | 449.00 |
| Imagewriter Wide Carriage, UNDER | 529.00 |
| LaserWriter Printer, UNDER | 4900.00 |
| **BROTHER** | |
| HR-15XL | 335.00 |
| HR-25 | 480.00 |
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| 6100S *** | 389.00 |
| **NEC** | |
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| ML-192S Mac/Lisa | 374.00 |
| ML-193S Mac/Lisa | 555.00 |
| **PANASONIC** | |
| KXP 1090 | 185.00 |
| KXP 1091*** | 245.00 |
| KXP 1092 | 367.00 |
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| KXP 3151 Letter Quality | 413.00 |
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| SR-10 | 490.00 |
| SR-15 | 589.00 |
| **TOSHIBA** | |
| P-1340 Printer w/Mac Drivers | 546.00 |

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| **ASSIMILATION PROCESS** | |
| Mac Memory Disk | 18.90 |
| Mac Tracks | 18.90 |
| Work N Print | 18.90 |
| **BATTERIES INCLUDED** | |
| Mac Battery Pak | 26.00 |
| **DREAMS OF THE PHOENIX** | |
| Quick and Dirty Utilities | 28.00 |
| **HIPPOPOTAMUS SOFTWARE** | |
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| **MICROANALYST** | |
| MacZap | 35.00 |
| **NEVINS MICROSYSTEMS** | |
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| Icon Libraries | 13.95 |
| Icon Switcher | 13.95 |
| **SILICON BEACH SOFTWARE** | |
| Accessory Pak 1 | 23.95 |
| **SOFTSTYLE** | |
| Epstart | 28.00 |
| **SYMMETRY CORP.** | |
| Quick Disk | 25.00 |

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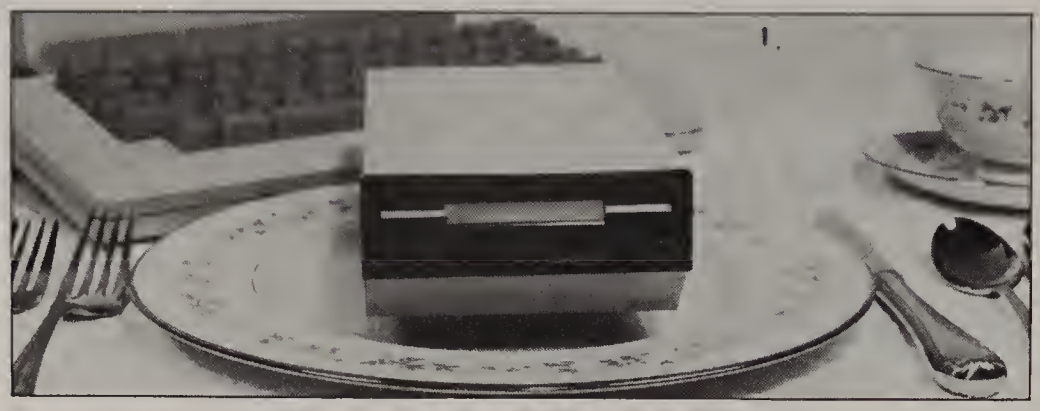

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800/343-1218, 617/937-0200 in Massachusetts
List price: $99.95

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**Hard Disk Util**
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**MacBackup**
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Champlin, MN 55316
612/427-4789
List price: $69.95

**MacCopy**
Tesseract Software
P.O. Box 937
Saint Catharines, Ontario
L2R 6Z4 Canada
416/685-4854
List price: $49.95

**MacCrack Pak II**
Bay Systems Co.
1001½ Broadway
San Francisco, CA 94133
List price: $79.95

**Mac Zap**
Micro-Analyst, Inc.
P.O. Box 15003
Austin, TX 78761
512/926-4527
List price: $60

**ProCopy**
Protekt-It Software, Inc.
P.O. Box 165222
Miami, FL 33116
305/554-9595
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**Business Pac**
Megahaus Corp.
5703 Oberlin Dr.
San Diego, CA 92121
619/450-1230
List price: $495

**Electronic Entrepreneur**
P.A.B. Business Systems
P.O. Box 9243
Spokane, WA 99209
509/325-3724
List price: $195

**EstiMac**
Superex Business Software
151 Ludlow St.
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800/862-8800, 914/964-5200 in New York
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**Human Resource Management**
Open Systems Inc.
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800/328-2276, 612/829-0011 in Minnesota
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**MacChoice**
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**MacKIT**
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Dillsburg, PA 17019
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**Management Edge**
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**Micro Planner**
Micro Planning Software USA
235 Montgomery St. #840
San Francisco, CA 94104
415/788-3324
List price: $395

**ODS Consultant**
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1011 E. Touhy #535
Des Plaines, IL 60018
800/628-2828 ext. 575, 312/699-4156 in Illinois
List price: $200

**Resourceful**
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408/946-9000
List price: $495

**TimeBase**
SoftDesign, Inc.
14145 S.W. 142nd Ave.
Miami, FL 33186
305/253-5521
List price: $149.95

## *Chart Programs*

**ColorChart**
Esoft Enterprises Ltd.
P.O. Box 179
Owasso, OK 74055-0179
918/272-7616
List price: $99.95

**Microsoft Chart**
Microsoft Corp.
P.O. Box 97200
Bellevue, WA 98009
800/426-9400, 206/828-8080 in Washington
List price: $125

**MockChart**
CE Software
801 73rd St.
Des Moines, IA 50312
515/224-1995
List price: license $25, license and disk $30

## *Communications/ File Transfer*

**Electronic Envelope**
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Princeton, NJ 08540
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**GriffinTerminal**
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503/232-1712
List price: $89

**GriffinTerminal-100**
Metaresearch, Inc.
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Portland, OR 97202
503/232-1712
List price: $99

**HabaCom**
Haba Systems
15154 Stagg St.
Van Nuys, CA 91405-1025
800/468-4222, 800/367-4222 in California
List price: $69.95

**Integrating Software**
Graham Computers
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Leavenworth, KS 66048
913/682-4215
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**inTouch**
Palantir Software
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Houston, TX 77070
800/368-3797, 800/831-3119 in Texas
List price: $145

**MacDasher**
Kaz Business Systems
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212/757-9566
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**MacLink**
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203/866-4944
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**Mac-Mail**
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**Mac+II**
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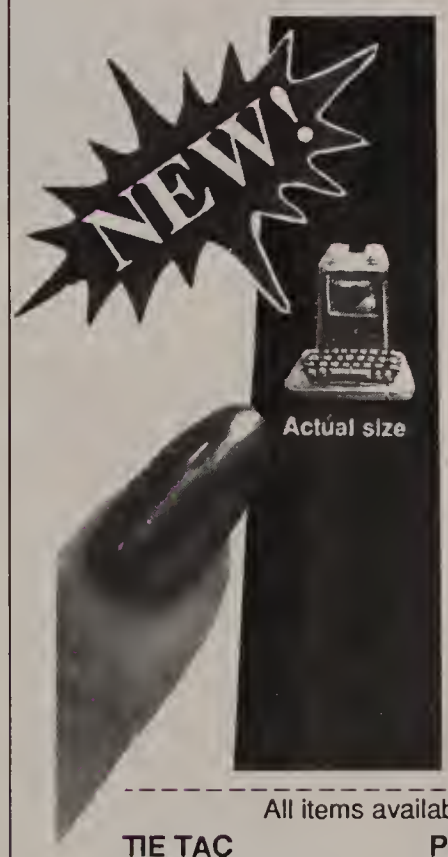


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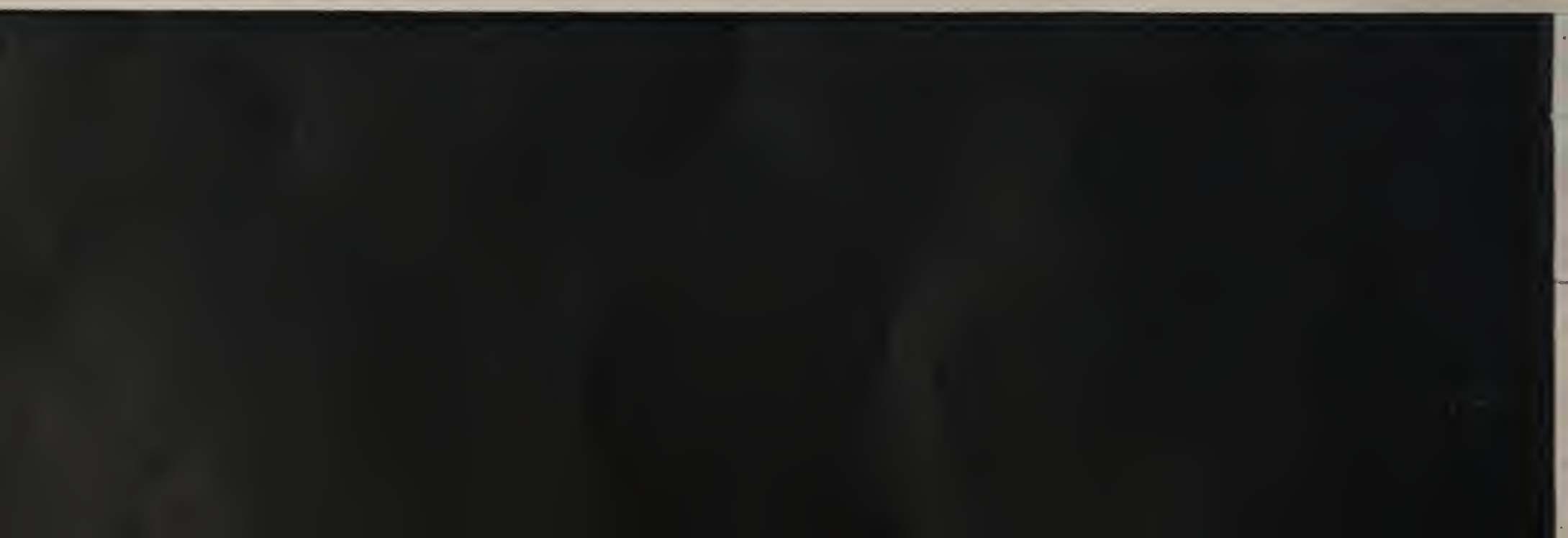

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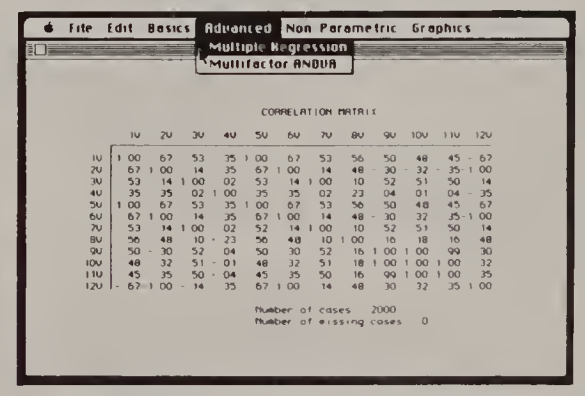


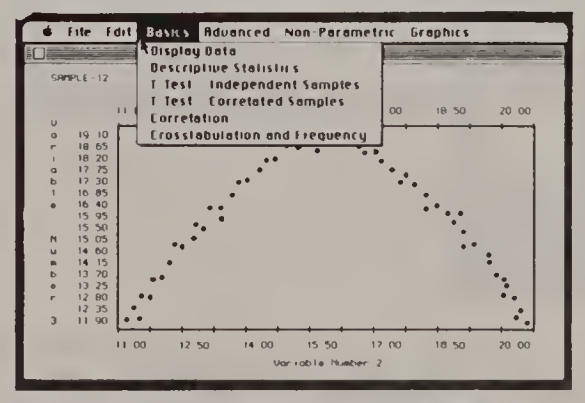


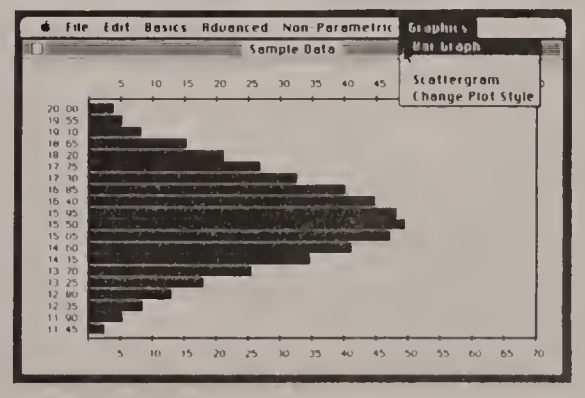


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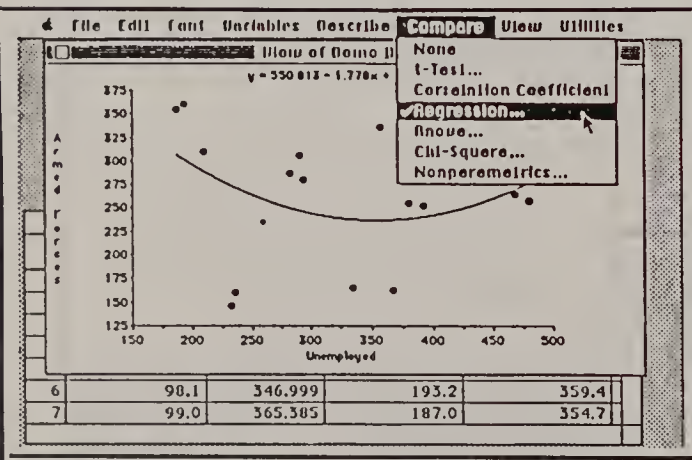

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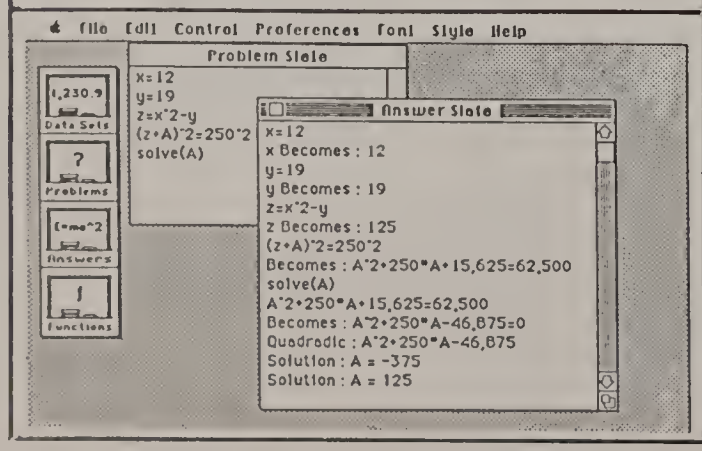


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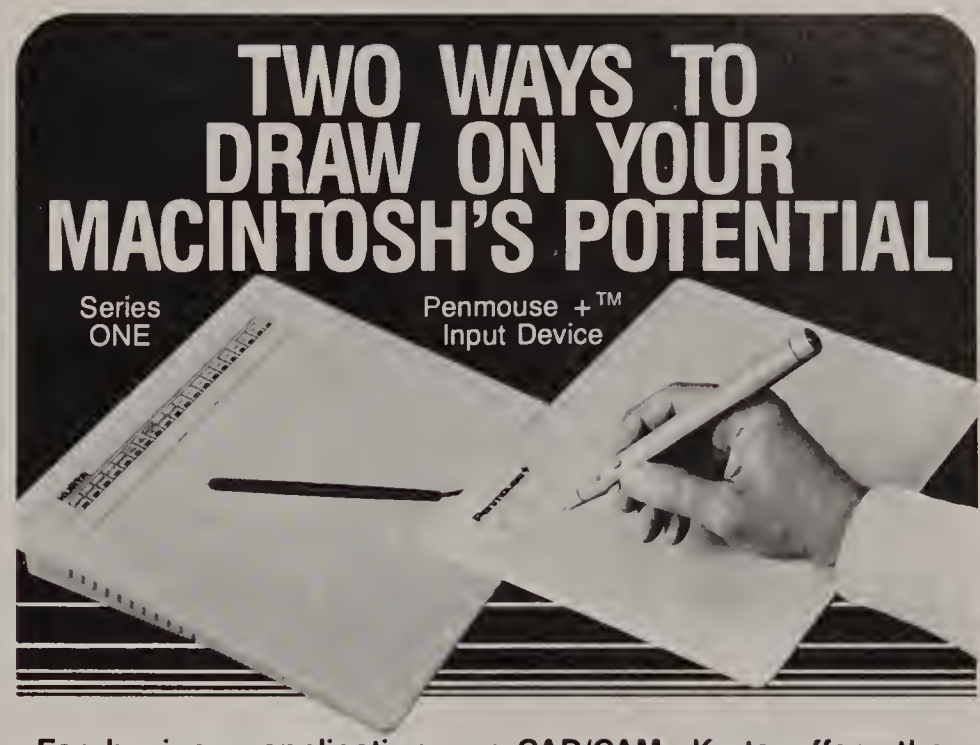


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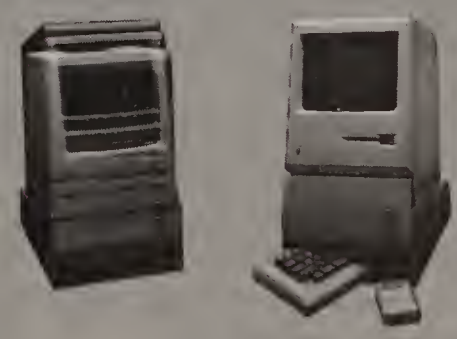

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**MacLanguage Series BASIC**
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Melbourne, FL 32936
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**MasterFORTH**
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Megamax, Inc.
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Richardson, TX 75085-1521
214/987-4931
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**Microsoft BASIC 2.0**
Microsoft Corp.
P.O. Box 97200
Bellevue, WA 98009
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Aubrac Systems
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**Softworks C**
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Chicago, IL 60657
312/975-4030
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**UniPlus+ Bell Labs UNIX System V**
UniPress Software, Inc.
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Edison, NJ 08817
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801/753-5681
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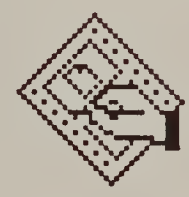

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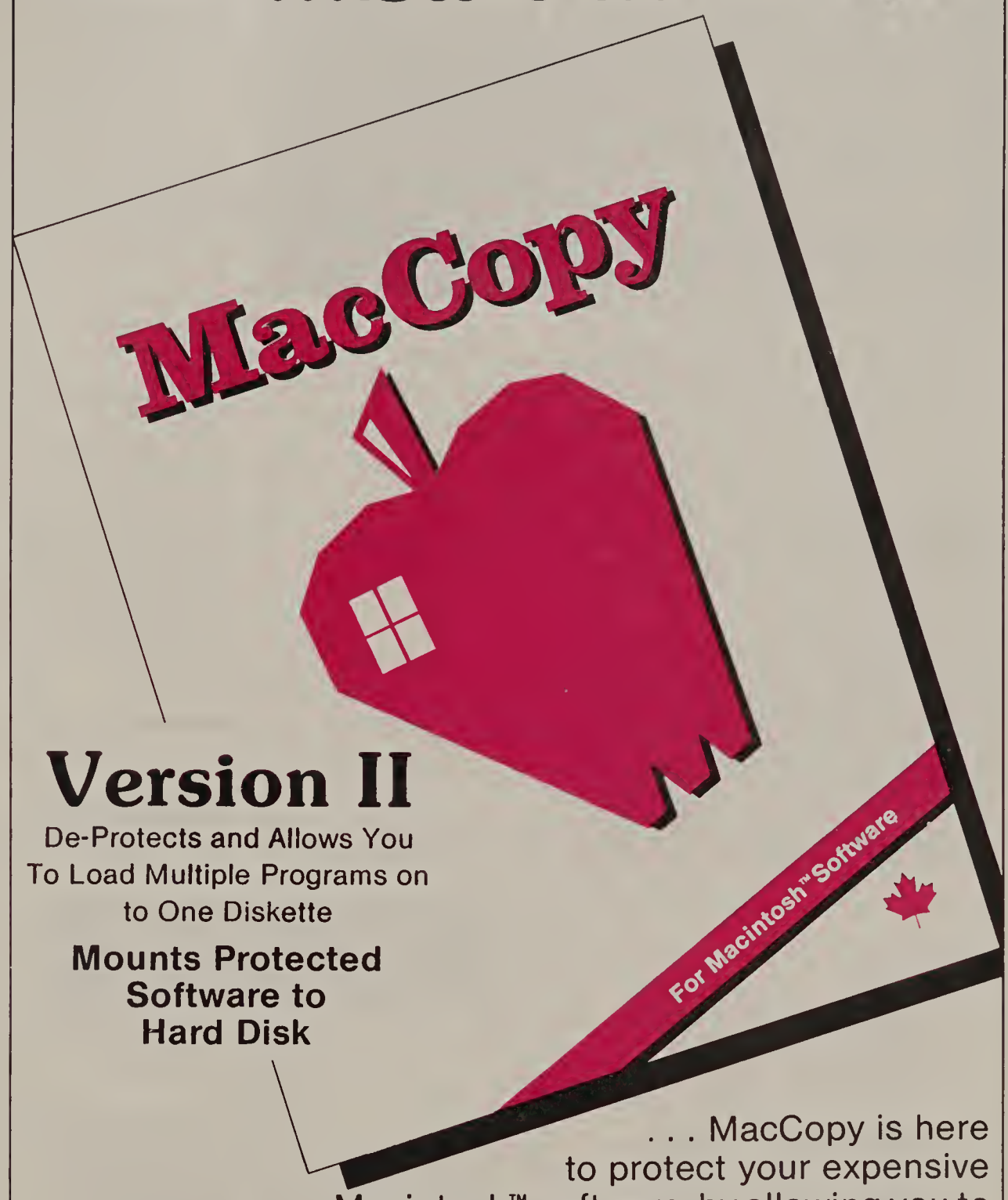


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